

# University News

A WEEKLY JOURNAL OF HIGHER EDUCATION

Vol 37 No 50

DECEMBER 13, 1999

Rs 9.00

**R.M. TUNGARE**

## **Modalities of Reorientation**

**M.L. SISODIA**

## **Imbalance Among the States in Major Disciplines of Education**

**—A Quantitative Analysis**

**J.N. KAPUR**

## **Our Liberated Educational System**

**K. WALIA**

## **Tasks Ahead in Teacher Education**

**PARVEEN R. AKHTAR**

## **Universities, Researches and the Affiliated Colleges of Assam**

**TRAINING SCIENCE TEACHERS**

**TOWARDS GLOBAL COMPETITIVENESS**



*Association of Indian Universities*

# Optical Illusions

*Do our eyes tell lies? Images such as two parallel lines that seem to meet or waves which seem to undulate confirm that our eyes do deceive us. Rembrandt, Dali and Picasso, three most famous painters to date used visual deceptions to their advantage. This phenomenon, referred to as an Optical Illusion, has received a lot of attention during the last couple of centuries. Though Optical Illusions are encountered frequently in everyday life, people's quest to unravel the mystery of illusions never ceases.*

## Synopses

### Optical Illusions-I

#### ***Distortions Illusions*** (16 Min)

Welcome to the world of optical illusions where nothing is what it seems. This program acquaints you with some common optical illusions in daily life and attempts to explain them.

### Optical Illusions-II

#### ***Artistic Expressions*** (19 Min)

Rambrandt, Dali, Picasso - three of the most famous painters to date. Each had his own distinctive style. Yet they all had one thing in common. They all used optical illusions to great advantage in their paintings. This programme takes a look at the use of optical illusions in art.

### Optical Illusions-III

#### ***Impossibles*** (19 Min)

The third episode goes into a detailed study of some

famous illusions. The never-ending staircase, the impossible triangle and many more illusions are discussed here, along with a description of illusions used by M.C. Escher in various sketches and paintings. (A series by EMRC, Hyderabad).

### Visual Environment & Behaviour - I (17 Min)

So far we have seen many illusions that clutter our daily life. Now we come to the psychological explanation for these phenomena. The programme deals with perception and its effect on our behaviour. The role of past experiences in moulding our perception is also explained.

### Visual Environment & Behaviour-II (13 Min)

This programme acquaints us with how, what we see, affects how we behave. We also realise that what we have already seen, has a marked impact on what we see. (A series by MCRC, Delhi).

To obtain this series,  
get in touch with :



**EDUCATION INTERNATIONAL**  
**I N D I A**

A venture of the Ministry of Human Resource Development, under  
the aegis of the University Grants Commission

**Other visual treasures with EI are -**

#### **UGC - CEC Countrywide Classroom**

Telecast on Doordarshan regularly for over 14 years. Repertoire of 6000 programmes. Enriching coverage of - Physics, Chemistry, Metallurgy, Geology, Botany, Zoology, Astronomy, Ecology and Environment, Music, Culture, Performing Arts, Homescience, Sports, Nutrition, Oceanography, Meteorology, Library & Information Sciences, Education, Management, Psychology, Computers, Electronics, Communication, Medicine, Architecture, Anthropology...

#### **University Video Lecture Course**

Comprehensive curriculum based video lectures, envisioned by the UGC, covering three year undergraduate course in: Psychology, History, Sociology, Geography, Commerce Mathematics, Home Science, Economics, Political Science

**EDUCATION INTERNATIONAL, CEC, NSC Campus, Aruna Asaf Ali Marg, New Delhi 110 067.**  
Tel. 91 (011) 689 7418 - 19; Fax: 91 (011) 689 7416. E-Mail: CEC@del2.vsnl.net.in

# UNIVERSITY NEWS

**VOL. 37**      **DECEMBER 13**  
**No. 50**      **1999**  
**Price**      **Rs. 9.00**

**A Weekly Journal of Higher  
Education published by the  
Association of Indian Universities**

## IN THIS ISSUE

Modalities of Reorientation	1
Imbalance Among the States in Major Disciplines of Education	3
Our Liberated Educational System	10
Tasks Ahead in Teacher Education	13
Universities, Researches and the Affiliated Colleges of Assam	15
<b>Campus News</b>	
Interactive Techniques for Distance Education	17
Towards Global Competitiveness	19
South Asian Education Conference	20
<b>Agriculture</b>	
Sustainable Animal Production	22
<b>News from UGC</b>	
Countrywide Classroom Programme	23
<b>News from Abroad</b>	
Year of Dialogue Among Civilizations	23
Book Review	25
Theses of the Month	27
Classified Advertisements	36

**Opinions expressed in the articles  
are those of the contributors and do  
not necessarily reflect the policies of  
the Association.**

### Editorial Committee :

Prof. K.B. Powar  
Prof. B.B. Dhar  
Mr. Sutinder Singh

### Editor :

SUTINDER SINGH

# Modalities of Reorientation

**R.M. Tungare\***

The general education and the commerce education needs to be differentiated clearly as the first emphasises more on general interests of the students from the point of view of personality development and the development of a student as a citizen of the country, the later focuses more on his special occupational interests. The commerce education, as it must be understood, is a special education and hence it must cater to wide range of occupational choices available to the students with adequate degree of specialisation. Though specialisation is called for in the construction of curriculum, the extreme cases of specialisation may lead to serious imbalances — resulting into adverse impact on personality development. Hence optimal mix of general education and special education is desirable in the reorientation of commerce education. It is certainly the challenging task before academicians to arrive at this optimal mix.

In providing the component of general education it is very clear that we intend to equip the students with adequate knowledge about the society, economy and geography and its implications for the development of trade and commerce in particular. At the same time student may be taught the aspect of scientific method — so that scientific temperament is adequately developed with a view to have better appreciation of the things around the students. This may be worked out systematically and incorporated in the syllabus as has been done in number of universities like Mumbai for their B. Com. degree course. The foundation course with the above elements may be the compulsory component — so that objectives of general education are taken care of.

The second aspect which needs attention at the general level is the exposure of the students to the constitution of India. The teaching of 'basics of the constitution' will enable him to be a good citizen of the country. The rights and duties of the citizen may be focused while teaching.

In the general stream at the third year degree course, a brief exposure of the economy is desirable. This will not only provide the descriptive account of Indian economy — but more analytical approach as to how economy functions. At the same time it may provide broad perspective from the point of view of working of economic systems as such. In the light of market orientation, the importance of socialist system might have been relegated to the backdrop but the understanding of the 'basics' of all the systems is not only desirable but all the more necessary with a view to broaden the perspective of a student.

Through commerce education, we are providing manpower for

*\*Professor of Labour Economics, Maharashtra Institute of Labour Studies,  
D.C. Road, Parel, Mumbai-400 012.*

trade, commerce and industry in the context of globalisation. The globalisation results into movements of capital across the nations — but at the same time it also results into flight of human capital across the boundaries — where the rate of return tends to be higher. This scenario necessitates providing high quality manpower at every conceivable level. In fact, in terms of labour market, the education system as a whole will be supplying 'knowledge workers'. The supply of knowledge workers is expected to meet the growing demands in more exact terms of trade, industry and commerce. Another vital aspect which needs careful treatment through manpower planning — is the requirement of workers for a wide range of new activities for example, an accountant will not only be handling the job of accounting manually, but through computerised accounting system. It necessitates that in the construction of curriculum 'computerised accounting system' needs to be incorporated which naturally requires more practical component in the syllabus. In the modalities of reorientation, we need to pay attention to the fact that curriculum construction is not to be thought of independently — but along with its integration with methods of instruction, use of teaching aides etc. The subjects like management information system (MIS) which were hitherto taught at the postgraduate level needs to be suitably incorporated at the undergraduate level. The flow of information needs to be channelised at appropriate levels for decision-making and even the undergraduate students need to know the 'basics' of Management Information System (MIS).

In the curriculum construction we need to give thought to another aspect i.e. the formation of World Trade Organisation (WTO) and its implications for Indian trade and commerce. The aspects like Intellectual Property Rights (IPR) assume significance in evolving suitable trade practices in Indian context. These developments in the international sphere necessitate that we need to introduce here the topics which will have better appreciation of this. If we are better informed in this regard then only Indian trade and commerce can confidently face the international competition. A brief exposure of this is needed even for undergraduate students in a subject like 'International

and domestic trade practices' which may cover topics like Essential Commodities Act, Consumer Courts, Consumer movement in general at the domestic level and the topics like IPR, WTO at the international level. The subject like this may be made compulsory in the curriculum to suit the emerging needs in the context of globalisation. In the elective group, a wide range of subjects may be introduced to suit different occupational choices. The illustrative list in the elective group may be as under :

Marketing Management,  
Financial Management,  
Operation Research,  
Human Resource Management,  
Labour Welfare and Industrial Relations, and  
Cooperative Management.

We need to provide wide range of choice in the elective group — so that a particular choice will give adequate exposure to the students at the professional entry level.

This article attempts to enunciate certain principles of curriculum construction in the light of re-orientation of commerce education. These principles may be briefly stated as follows —

- There needs to be optimal mix of general education and special education.
- The special efforts may be made in the construction of curriculum of commerce education towards development of scientific temperament of commerce students.
- The commerce students need to be given analytical account of Indian economy.
- The curriculum construction may be thought of in an integrated manner so as to cover aspects like teaching methodology, teaching aids etc.
- We need to focus more on aspects arising out of globalisation and some of the institutional developments like the formation of World Trade Organisation (WTO). □



# Imbalance Among the States in Major Disciplines of Education

## —A Quantitative Analysis

MLL Sisodia\*

### Introduction

There has been a phenomenal expansion in tertiary education system over the last five decades. The number of universities (including deemed) went up from 20 in 1947 to 217 in 1997, colleges (including professional) from 591 to 8,522, student strength from 2,28,881 to 58,98,417, and teachers from 24,000 to 3,20,000. Since independence, Indian higher education system has undergone a unique transformation from an elitist to an egalitarian one.<sup>1</sup> However, there is regional imbalance in the creation of facilities in different disciplines of higher education.<sup>2,3</sup> This writ-up described quantitatively the regional imbalance in existing facilities for liberal (general), engineering, medical and teacher education. An attempt has also been made here to project the additional enrolment and number of students that would be required for a balanced growth of higher education in major states. The method adopted is the one suggested by Shrivastava and Khare<sup>4</sup> in the case of Technical Education.

### Balanced Growth Parameters

In this study, six parameters considered important viz. (1) population, (2) literate population, (3) number of districts, (4) number of high/higher secondary school, (5) enrolment/student strength in high/higher secondary schools, and (6) net domestic product, have been taken which influence the enrolment and creation of facilities for higher education in various states. Table 1 contains these data for 17 states having a population of more than 50 lakhs (1991 Census). Table 2 gives the number of institutions and respective enrolment as on 30th Sept. 1996. The data for population and literate population are of the 1991 census. The data for number of districts, number of schools and enrolment/student strength are of 1996-97 and the data for net domestic product are of 1993-94. In spite of the fact that parameters are of different years the analysis is not hampered in bringing out quantitatively the imbalance in facilities for tertiary education among the states. The value of parameters for India are also given in the bottom row of Tables 1 and 2. Table 3A give the enrol-

ment per unit of the parameters given in Tables 1 and 2 for engineering education. In the following pages first the analysis for engineering education has been presented and later the analysis for medical, teacher and general education is given in brief.

### Engineering Education

In columns one and two of Table 3A are given the enrolment (in 1996) per million population and the enrolment (in 1996) per million literate population. It shows wide variation among the states which indicates imbalance in the enrolment capacity in different states. States like Bihar, Uttar Pradesh, Rajasthan and Assam have less enrolment capacity in engineering as compared to states like Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh. Columns four and five of Table 3A give information about enrolment capacity per hundred high/higher secondary schools and per ten thousand student strength in high/higher secondary schools, respectively. These data show that students in states like Himachal Pradesh, Orissa, Assam, and Rajasthan have less opportunity for enrolment in engineering colleges as compared to Karnataka, Maharashtra, Andhra Pradesh and Tamil Nadu. These latter states have large enrolment per ten thousand student strength in high/higher secondary schools i.e. there are more opportunities for getting admission in engineering institution. This is another example of state imbalance in the engineering education facilities. Column 6 gives the enrolment per Thousand Crore Rupees of net domestic product, Karnataka (2228), Maharashtra (914) Tamil Nadu (809), Kerala (677), Andhra Pradesh (674) have large enrolment average as against the national average (533). All others states have less average than the national average, which is a further example of regional imbalance and results in poor industrial growth<sup>5</sup> (in other terms their net domestic product is less than that of the states like Maharashtra, Tamil Nadu etc).

### State Enrolment and Balanced Growth Parameters

In Table 4A all the states are arranged in ascending order according to the value for each of the six parameters. This forms a 17x6 matrix with states as element. Following the method suggested by Shrivastava this matrix is sub-divided into three parts by drawing

\*Former Director, Academic Staff College, University of Rajasthan, Jaipur.

horizontal lines after 6th and 12th row and named as Part I, II and III. A state appearing in Part I is counted and arranged in Part I of Table 5A. Similarly states are arranged in Part II and Part III. (Table 5A). A weight of 1 is assigned for the state appearing once in Part I, weight of 2 for the state appearing once in Part II and weight of 3 for the state appearing once in Part III. For example Uttar Pradesh appeared five times in Part I and once in Part II, its weighted score is 7 (5+2). Delhi appeared once in Part I, three time in Part II and two times in Part III, its weighted scores is 13 (1+6+6). In this way weighted score of each state is calculated and then the states are arranged in ascending order according to value of weighted score. Again, groups are formed to give the preferences to the state in Table 6A.

From the above analysis it is clear that the states appearing in Group A (again listed in order of preference in group have the lowest weighted score and therefore should be given preference in creating facilities and increasing enrolment for engineering education. Second, third, and fourth preferences be given to states falling under Group B, Group C, and Group D. The results are in agreement with the findings of Shrivastava and Khare.<sup>4</sup>

#### Medical, Teacher and General (Liberal) Education

Similarly using data in Table 1 and 2, Tables are developed for medical, teacher and general education, respectively. (These can be obtained from the author). On examining these tables it is clear that there is imbalance in the available facilities for medical, teacher and general education in different states. The states which need first preference for creating facilities (enrolment and institutions) for engineering, medical, teacher and general education are as follows :

<i>Discipline</i>	<i>First Preference States</i>
Engineering	Rajasthan, U.P., Assam, H.P., Bihar
Medical	U.P., W. Bengal, M.P., Orissa, Assam
Teacher Education	Bihar, H.P., Orissa, Tamil Nadu, Delhi
General (Liberal) Education	Orissa, Rajasthan, M.P.

#### Quantitative Analysis

An analysis has also been made to quantify the total enrolment in different disciplines and corresponding number of institutions for each state. In Table 3A, the last but one row, gives the enrolment in engineering colleges per unit of parameters for India. From this data the percentage contribution of each of the six parameters, is determined and given in the last row (Table 3A).

It is noted that student strength in high/higher secondary schools contributes to the tune of 31-32 per cent to the enrolment in higher education, followed by literate population 19 per cent and net domestic contributes to the tune of 14 per cent. It shows that demand for higher education is closely linked with student strength in high/higher secondary school, literacy rate (literate population) and net domestic product (i.e. economic growth).

The enrolment required due to each of the six parameters is calculated for each state as :

Enrolment per unit of parameter in India x value of the parameter of the State x Percentage contribution to enrolment due to parameter. These are given in columns 3 to 8 of Table 7A. For example enrolment required due to population of Rajasthan is

$$388 [\text{Table 3A}] \times 44 [\text{Table 1}] \times 10.7 [\text{Table 3A}] = 1719$$

and it is given in first row and third column Table 7A).

The enrolment required due to literate population in this state

$$743 [\text{Table 3A}] \times 16.9 [\text{Table 1}] \times 19.28 [\text{Table 3A}] = 2420$$

and is given in first row and fourth column (Table 7A). Similarly enrolment required is determined for other parameters and given in first row and 5,6,7 and 8th columns (Table 7A) for the state of Rajasthan. The total enrolment required based on the six parameters is given in column 9 (Table 7A) [It is the sum of columns 3 to 8 of first row] and column 10 (Table 7A) gives the need of additional enrolment for the states. For example in Rajasthan the required enrolment for balanced growth is 15127, the enrolment available is 4551 and additional enrolment needed is 10576 in engineering education.

The difference in enrolment of columns 9 and 2, if positive gives the additional enrolment needed and, if negative, then actual enrolment is in excess. It is noted that states like Karnataka, Maharashtra, Tamil Nadu, Andhra Pradesh, Assam and Bihar need first preference for creating additional facilities by increasing enrolment and opening additional institutions. The number of additional colleges is calculated, on the basis of present national average of total enrolment per college and is given in column 5 of Table 8. From the above analysis it is clear that steps should be taken by the state and AICTE to open new engineering colleges in the states which are deficient in enrolment. The first preference states are in Group A, followed by second preference states in Group B (Table 6A).

Following the procedure discussed above for engineering education, the total enrolment required for

medical, teacher and general education based on the six parameters has also been worked out. For example, Rajasthan's required enrolment is : in medical (5,573), teacher training (5,337) and general education (2,45,765); enrolment available in medical (4,017), teacher education (7,241) and general education (1,52,249) and additional enrolment needed in medical (1,556) teacher education (-1,904) and general education (93,516). Rajasthan have excess enrolment in teacher education.

It is observed that the states of Maharashtra, Gujarat, Tamil Nadu, Delhi and Bihar have excess enrolment in medical education. The states of Maharashtra, Karnataka, Uttar Pradesh, Rajasthan, Haryana and Punjab are having excess enrolment in teacher education colleges. The States like Delhi, Bihar, Assam, West Bengal, Uttar Pradesh, Karnataka and Gujarat have excess enrolment in general education colleges. State with excess enrolment should not create any new facilities in the respective disciplines of study. The states which need additional enrolment in respective discipline should take necessary steps in creating these facilities. In columns 6, 7 and 8 of Table 8 additional number of institutions needed for medical, teacher and general education are given. It is calculated on the basis of present national average of enrolment per college. It is suggested that the states should take necessary steps for opening required number of new institutions. The states which fall in Group A need first preference in this regard.

The national average per institution (Table 8) is less

and this has to be more i.e. total enrolment per institute should be more. It is reasonable to assume that the national average for engineering and general education may be 1000 per college and for medical and teacher education it may be 250 per college. With this assumption the required number of colleges, and additional number of colleges required are given in Table 9. Dash indicates that excess facility exists in the state. It is suggested that steps should be taken to increase the total enrolment in the existing colleges, opening of new colleges and improving the infrastructural facilities for increased enrolment in the existing institutions and in the new ones.

It may be suggested that the present analysis may form the initial base for opening new colleges and augmenting the facilities for increased enrolment in existing colleges in the states for a balanced growth of tertiary education.

#### References

1. Powar, K.B., 1997, *Higher Education in India Since Independence : Retrospect and Future Options*, AIU, New Delhi.
2. Sisodia, M.L. Higher Education — Growth and Future Options. *University News*, Vol 37 No. 15, April 12, 1999.
3. Shrivastava, J.P. and Khare, P.K. *Projection for progressive stock of Technical Manpower in India*; International Conference on Technical Education for 21st century; Challenges and Strategies in Global Perspective, Directorate of Tech. Education, Govt. of M.P., Bhopal, Jan. 1998.
4. Shrivastava, J.P. and Khare, P.K. Growth of Technical Education and Unemployment Pattern : Regional Imbalance and Remedies, *University News* Vol. 36 No. 50 Dec. 4, 1998.
5. Srinivasan, R., Collegiate Education and Economic Growth in India : 1951-57, *University News* Vol. 37 No. 10 March 8, 1999. □

Table 1 Values of Various Parameters for Balanced Growth

S.No.	State	1	2	3	4	5	6	7
1.	Rajasthan	44.00	38.55	16.9	31	49.03	11.83	23.302
2.	Madhya Pradesh	66.1	44.20	29.2	45	67.88	22.52	38.261
3.	Orissa	31.6	49.09	15.5	30	66.38	12.98	15.694
4.	Assam	22.4	52.89	11.8	23	44.15	8.33	11.735
5.	West Bengal	68.1	57.70	39.2	17	67.28	18.81	41.603
6.	Uttar Pradesh	139.1	41.60	57.8	65	70.03	34.97	69.120
7.	Bihar	86.4	38.48	33.2	50	46.86	14.46	29.341
8.	Delhi	9.4	75.29	7.0	1	13.18	11.37	11.201
9.	Haryana	16.5	55.85	9.1	16	32.33	5.11	18.057
10.	Himachal Pradesh	5.2	63.86	3.3	12	12.78	2.72	2.798
11.	Punjab	20.3	58.51	11.8	14	32.93	7.51	26.002
12.	Andhra Pradesh	66.5	44.09	29.3	23	100.89	17.40	45.187
13.	Tamil Nadu	55.8	62.66	35.0	23	63.08	21.53	48.185
14.	Karnataka	45.0	56.04	25.2	20	80.04	14.42	32.926
15.	Kerala	29.1	89.81	26.1	14	32.94	12.80	19.585
16.	Gujarat	41.3	61.29	25.3	19	58.02	13.87	32.240
17.	Maharashtra	78.9	64.87	51.2	30	137.85	32.80	91.208
18.	Other	20.6	52.21	10.7	69	46.18	6.94	99.404
19.	India	846.3	52.21	441.8	502	1021.83	270.37	615.273

Heading of Various Columns are : 1. Population in Millions (1991) 2. Literacy Rate (1991) 3. Literate population in Millions (1991) 4. No. of Districts 5. No. of High/Higher Secondary Schools x Hundred (1996) 6. Enrolment in High/Higher Secondary Schools x Ten Thousand (1996) 7. Net Domestic Product in Rs. Thousand Crores (1993-94).

Source : Selected Educational Statistics, MHRD, Govt. of India New Delhi, 1997.



**Table 2 Number of Institutions and Enrolment as on 30th Sep. 1996**

S. No.	State	Engineering Colleges		Medical Colleges		T.T. Colleges		General Edu. Colleges	
		No.	Enrolment	No.	Enrolment	No.	Enrolment	No.	Enrolment
1.	Rajasthan	7	4551	22	4017	39	7241	206	152249
2.	Madhya Pradesh	19	10598	25	4740	20	5734	448	236326
3.	Orissa	10	4981	20	2851	13	1955	497	14412
4.	Assam	3	3323	7	2356	22	2575	247	170595
5.	West Bengal	12	9604	19	3770	24	7386	308	389581
6.	Uttar Pradesh	18	14229	35	6910	62	17775	550	698947
7.	Bihar	11	6381	31	14265	15	2313	742	597465
8.	Delhi	9	4262	9	4623	4	820	64	230476
9.	Haryana	9	4132	10	2009	18	3556	129	111716
10.	Himachal Pradesh	1	691	4	812	1	245	62	55107
11.	Punjab	11	4196	18	3519	18	3787	190	151959
12.	Andhra Pradesh	31	30476	29	7833	51	7741	750	308094
13.	Tamil Nadu	74	39017	78	11316	22	3211	280	301201
14.	Karnataka	49	73385	125	5060	64	7150	761	356962
15.	Kerala	20	13277	20	4691	19	3751	173	146256
16.	Gujarat	14	17698	26	10600	42	5100	303	349350
17.	Maharashtra	111	83454	166	27779	244	32274	820	778322
18.	Other	9	3758	11	4034	19	3427	229	154170
19.	India	418	328399	655	121185	697	116041	6759	5332782

Source : 1. Selected Educational Statistics, MHRD Govt. of India, New Delhi 1997. 2. Annual Report, 98, MHRD.

**Table 3A. Enrolment Per Unit of Parameters (Engineering Education)**

S. No.	State	1	2	3	4	5	6
1.	Rajasthan	103	269	146	92	385	195
2.	Madhya Pradesh	160	363	235	156	470	276
3.	Orissa	157	321	166	75	383	317
4.	Assam	148	281	144	75	398	283
5.	West Bengal	141	245	564	142	510	230
6.	Uttar Pradesh	102	246	218	203	406	205
7.	Bihar	73	192	127	136	441	217
8.	Delhi	453	608	4262	323	374	380
9.	Haryana	250	454	258	127	808	228
10.	Himachal Pradesh	132	209	57	54	254	246
11.	Punjab	206	355	299	127	559	161
12.	Andhra Pradesh	458	1040	1325	302	1751	674
13.	Tamil Nadu	699	1114	1696	618	1812	809
14.	Karnataka	1630	2912	3669	916	5087	2228
15.	Kerala	456	508	948	403	1037	677
16.	Gujarat	428	699	931	305	1275	548
17.	Maharashtra	1057	1629	2781	605	2544	914
18.	Other	182	351	54	81.37	541	37
19.	India	388	743	654	321	1214	533
	% Contribution (100)	10.07%	19.28%	16.97%	8.33%	31.50%	13.83%

Headings of Various Columns are : 1. Enrolment per Million Population 2. Enrolment per Million Literate Population (1991), 3. Enrolment per District, 4. Enrolment per Hundred High/Higher Secondary School 5. Enrolment per Ten Thousand Student Strength in High/Higher Sec. Schools. 6. Enrolment per Rs. Thousand Crore of Net Domestic Product.



**Table 4A. States Arranged in Ascending Order According to the Value for Each of the Six Parameters (Engineering Education)**

S. No.	State	1	State	2	State	3	State	4	State	5	State	6
1.	Bihar	73	Bihar	192	H.P.	57	H.P.	54	H.P.	254	Punjab	161
2.	U.P.	102	H.P.	209	Bihar	127	Orissa	75	Delhi	374	Rajasthan	195
3.	Rajasthan	103	W. Bengal	245	Assam	144	Assam	75	Orissa	383	U.P.	205
4.	Himachal P.	132	U.P.	246	Rajasthan	146	Rajasthan	92	Raj.	385	Bihar	217
5.	W. Bengal	141	Rajasthan	269	Orissa	166	Haryana	127	Assam	398	Haryana	228
6.	Assam	148	Assam	281	U.P.	218	Punjab	127	U.P.	406	W. Bengal	230
7.	Orissa	157	Orissa	321	M.P.	235	Bihar	136	Bihar	441	H.P.	246
8.	M.P.	160	Punjab	355	Haryana	258	W. Bengal	142	M.P.	470	M.P.	276
9.	Punjab	206	M.P.	363	Punjab	299	M.P.	156	W. Bengal	510	Assam	283
10.	Haryana	250	Haryana	454	W. Bengal	564	U.P.	203	Punjab	559	Orissa	317
11.	Gujarat	428	Kerala	508	Gujarat	931	A.P.	302	Haryana	808	Delhi	380
12.	Delhi	453	Delhi	608	Kerala	948	Gujarat	305	Kerala	1037	Gujarat	548
13.	Kerala	456	Gujarat	699	A.P.	1325	Delhi	323	Gujarat	1275	A.P.	674
14.	A.P.	458	A.P.	1040	Tamil Nadu	1696	Kerala	403	A.P.	1751	Kerala	677
15.	Tamil Nadu	699	Tamil Nadu	1114	Maharashtra	2781	Maharashtra	605	T.N.	1812	T.N.	809
16.	Maharashtra	1057	Maharashtra	1629	Karnataka	3669	Tamil Nadu	618	Maharashtra	2544	Maharashtra	914
17.	Karnataka	1630	Karnataka	2912	Delhi	4262	Karnataka	916	Karnataka	5087	Karnataka	2228

Heading of Various Columns are : 1. Population 2. Literate Population 3. District 4. High/Higher Secondary Schools.  
5. Enrolment in High/Higher Secondary Schools 6. Net Domestic Product.

**Table 5A. Order of Merit of States in Part I, II and III [Engineering Education]**

Part I	Part II	Part III
Rajasthan — (6)	Madhya Pradesh — (6)	Maharashtra — (6)
Uttar Pradesh — (5)	Punjab — (4)	Karnataka — (6)
Himachal Pradesh — (5)	Haryana — (4)	Tamil Nadu — (6)
Assam — (5)	Gujarat — (4)	Andhra Pradesh — (5)
Bihar — (4)	Orissa — (3)	Kerala — (3)
West Bengal — (3)	Delhi — (3)	Gujarat — (2)
Orissa — (3)	Kerala — (3)	Delhi — (2)
Haryana — (2)	West Bengal — (3)	
Punjab — (2)	Bihar — (2)	
Delhi — (1)	Uttar Pradesh — (1)	
	Andhra Pradesh — (1)	
	Assam — (1)	
	Himachal Pradesh — (1)	

Note : Figures in round brackets indicate the number times a state appears in Part I, II and III.

**Table 6A. Order of Preferential Groups of States [Engineering Colleges]**

Preferences (Objects)	Groups	States in order of preference in group
First (6 to 8)	Group A	Rajasthan (6), Uttar Pradesh (7), Assam (7), Himachal Pradesh (7), Bihar (8)
Second (9 to 11)	Group B	West Bengal (9), Orissa (9), Haryana (10), Punjab (11)
Third (12 to 14)	Group C	Madhya Pradesh (12), Delhi (13), Gujarat (14)
Fourth (14 to 18)	Group D	Kerala (15), Andhra Pradesh (16), Maharashtra (17), Karnataka (18), Tamil Nadu (18)

Note : Figures in round brackets indicate the weighted score.

**Table 7A. Contribution of Balanced-Growth-Parameters on Enrolment in Each State  
(Engineering Education)**

S. No.	State	1	2	3	4	5	6	7	8	9	10
1.	Rajasthan	7	4551	1719	2420	3440	1311	4520	1717	15127	10576
2.	Madhya Pradesh	19	10598	2582	4183	4994	1815	8608	2820	25001	14403
3.	Orissa	10	4981	1234	2220	3329	1774	4963	1156	14676	9695
4.	Assam	3	3323	875	1690	2552	1180	3181	864	10342	7019
5.	West Bengal	12	9604	2660	5615	1886	1799	7193	3066	22219	12615
6.	Uttar Pradesh	18	14229	5434	8279	7213	1872	13372	5095	41265	27036
7.	Bihar	11	6381	3375	4755	5549	1253	5529	2162	22623	16242
8.	Delhi	9	4262	367	1002	110	352	4344	825	7000	2738
9.	Haryana	9	4132	644	1303	1775	864	1954	1330	7870	3738
10.	Himachal Pradesh	1	691	203	472	1331	341	1036	205	3588	2897
11.	Punjab	11	4196	793	1690	1553	880	2868	1916	9700	5504
12.	Andhra Pradesh	31	30476	2598	4197	2552	2697	6650	3330	22024	- 8452
13.	Tamil Nadu	74	39017	2180	5013	2552	1686	8233	3551	23215	- 15802
14.	Karnataka	49	73385	1758	3609	2219	2140	5514	2426	17666	- 55719
15.	Kerala	20	13277	1136	3738	1553	880	4891	1443	13641	364
16.	Gujarat	14	17698	1613	3624	2108	1551	5304	2376	16576	- 1122
17.	Maharashtra	111	83454	3082	7334	3329	3686	12543	6722	36696	- 46758

Heading of Various Columns are : 1. No of Colleges 2. Enrolment as on 30th Sept. 1996 3. Contribution due to Population 4. Contribution due to Literate Population 5. Contribution due to No. of Districts 6. Contribution due to No. of High/Higher Secondary Schools 7. Contribution due to enrolment in High/Higher Secondary Schools 8. Contribution due to Net Domestic Product 9. Total Enrolment Required 10. Additional Enrolment Needed.

**Table 8. No. of Institutions Required as per National Average of Enrolment per Institute and  
No. of Additional Institutes to be opened in the State to Achieve Balanced Growth in  
Different Disciplines of Education**

S. No.	State/ National Average	No. of Institutes Required as per National Average				No. of Additional Inst. Required			
		Eng. 785 (I)	Med. 185 (II)	T.T.C. 166 (III)	Gen. Edu. 788 (IV)	Eng. (V)	Med. (V)	T.T.C. (VI)	Gen. Edu. (VII)
1.	Rajasthan	19	30	32	311	12	8	- 7	105
2.	M.P.	31	49	53	515	12	24	33	67
3.	Orissa	18	29	31	302	8	9	18	- 195
4.	Assam	13	20	21	213	10	13	- 1	- 34
5.	W. Bengal	28	44	47	458	16	25	23	150
6.	Uttar Pradesh	52	82	87	825	34	47	25	275
7.	Bihar	28	45	48	466	17	14	33	- 276
8.	Delhi	8	13	14	144	- 1	4	10	80
9.	Haryana	10	15	16	162	1	5	- 2	33
10.	H.P.	4	7	7	74	3	3	6	12
11.	Punjab	12	19	20	200	1	1	2	10
12.	A.P.	28	43	46	454	- 3	24	- 5	- 296
13.	Tamil Nadu	29	46	49	478	- 45	- 32	27	198
14.	Karnataka	22	35	37	364	- 27	- 90	- 27	- 397
15.	Kerala	17	27	28	254	- 3	7	9	81
16.	Gujarat	21	33	35	341	7	7	- 7	38
17.	Maharashtra	46	73	77	1441	- 65	- 93	- 167	621

Note : (-)ive sign indicates excess No. of Institutes.

**Table 9. No. of Institutions Required as per Assumed Average of Enrolment per Institute and No. of Additional Institutes to be Opened in State to Achieve Balanced Growth**

S. No.	State/ Assumed Average	No. of Institutes Required as per Assumed Average				No. of Additional Inst. Required			
		Eng. 1000	Med. 250	T.T.C. 253	Gen. Edu. 1000	Eng.	Med.	T.T.C.	Gen. Edu.
1.	Rajasthan	15	22	21	245	8	0	—	39
2.	M.P.	25	37	35	406	4	12	15	—
3.	Orissa	14	21	20	238	4	1	7	—
4.	Assam	10	15	14	168	7	8	—	—
5.	W. Bengal	22	33	31	361	10	14	7	53
6.	Uttar Pradesh	41	61	58	650	23	26	—	150
7.	Bihar	22	33	32	367	11	2	17	—
8.	Delhi	7	10	10	114	—	1	8	50
9.	Haryana	8	11	11	128	—	1	—	—
10.	H.P.	4	5	5	58	3	1	4	—
11.	Punjab	9	14	14	157	—	—	—	—
12.	A.P.	22	32	31	357	—	3	—	—
13.	Tamil Nadu	23	34	32	377	—	—	10	97
14.	Karnataka	17	26	25	287	—	—	—	—
15.	Kerala	13	20	19	200	—	0	0	27
16.	Gujarat	16	24	23	269	2	—	—	—
17.	Maharashtra	37	54	52	1135	—	—	—	315

Note : Dash indicates that excess number of colleges exist in the state.

## NATIONAL INSTITUTE OF FOUNDRY AND FORGE TECHNOLOGY

(An Autonomous Body registered as a Society and fully funded by the Ministry of Human Resource Development)



HATIA : RANCHI-834003

**Advertisement No. 2/99**

### NEEDS

#### PROFESSOR (Industrial Engg. & Management)

National Institute of Foundry and Forge Technology (NIFFT), Ranchi, is in search of a suitable person to be appointed as a Professor (Industrial Engineering & Management). The Scale of pay is Rs. 16,400-450-20,900-500-22,400/- in addition, allowances are admissible as per the Institute rules, which are currently at par with Central Government rates. Age should preferably be below 50 years.

#### Qualification and experience:

- Ph.D. in appropriate area with 1st class degree at Bachelor's or Master's level in Engineering/Technology.
- Minimum 10 years experience in the relevant field in teaching/industry/research out of which 5 years must be at the level of Asstt. Professor or equivalent.

Interested persons may send their Bio-data giving information regarding age, academic qualification, professional experience, present occupation, salary and other details within thirty days from the date of publication of the Notice in the University News addressed to "The Director, NIFFT, Hatia, Ranchi-834003". Persons who are employed in Central/State Government, quasi-Government and public sector undertakings should apply through proper channel, a Demand Draft for Rs. 100/- in favour of NIFFT, Ranchi, payable at Ranchi should invariably be enclosed while sending the application for consideration.

**ASSTT. REGISTRAR**

# Our Liberated Educational System

J.N. Kapur\*

## A Liberated Curriculum

Last month I came across almost by chance an interesting satirical article on "A liberating curriculum" by Robert F. Borkat published on page 11 of *Newsweek* of April 12, 1993.

Here Borkat proposed a simple scheme that at the end of the second week of a course, all students should be assured of a final grade A, so that their minds are relieved of anxiety and they are free to do whatever they want for the rest of the term. He enumerated the benefits of this scheme as follows: "Students will be assured of high grade point averages, professors will be relieved of useless boredom and will have time to pursue their real interests, universities will achieve the long-desired goal of moulding individual professors into interchangeable parts of a smoothly operating machine, even the environment will be improved because education will no longer consume vast quantities of paper for books, compositions and examinations."

He also answered the prospective critics who may raise trivial objections to this wonderful scheme. "Those who believe that they have to uphold the dignity of their profession are living under a delusion, those who believe that they have a duty to increase the knowledge of their students must realise that the concept of reward for merit is elitistic and therefore wrong in a society that aims for equality in all things. We are a democracy. What could be more democratic than to give exactly the same grade to every single student."

The scheme is simplicity itself "Abolish all examinations and declare the performance of every student as excellent."

I realised at once that his scheme was being implemented, in letter and in spirit, by the highest educational authorities in India.

## Liberated Refresher Courses

Take the case of orientation and refresher courses organised by Academic Staff Colleges on behalf of the University Grants Commission. Here every participating teacher is assured on the first day itself that he or she will get a certificate of satisfactory perform-

ance (grade A) and he or she would not have to appear in any quizzes or tests. Their minds are completely at ease throughout the course and they can enjoy the course as much (or as little) as they like. They are requested to attend the lectures, but even if they miss some or most of the lectures, it will make no difference in their getting the certificates required for promotion in their jobs. The resource persons are happy because they can give lectures on topics of their choice to a captive audience which is there to listen to whatever they say because of the T.A. & D.A. provided by the UGC in addition to the promise of a promotion. They are under no obligation to see that the lectures they give are followed. There is no set curriculum for them. They have not to correct any assignments or tests and they have an opportunity to give lectures on topics of which they are the masters. It does not matter whether these topics are relevant to the needs of the teachers and whether there is any motivation on the part of the teachers to understand, whatever is taught to them.

The organisers are happy because they have an opportunity to come into contact with leading experts in all fields and they of course receive praise from all the participants for a job well done.

This is a perfect example where banishing of examinations provides a perfect atmosphere of freedom for learning and teaching, whether the learning takes place is another matter and is irrelevant.

The critics who are disappointed on the final knowledge retained by the participants are told, "These teachers have been exposed to the best minds in their subjects, they have listened to good lectures, a few may have been motivated to learn more and do research. What more do you expect from a four weeks course?"

## Liberated Teachers

Again take the case of assessment of teachers. Every teacher is assured on the day he joins a college or university that he will be confirmed irrespective of his performance. Even if he joins in a temporary capacity, he has the implicit assurance, that some day some kind minister interested in the vote-bank of teachers will regularise the services of all temporary teachers. Thanks to the merit promotion scheme of the UGC, he also feels that he will get promotions at regular intervals after some formalities of interviews

---

\*Mathematical Sciences Trust Society, C-766, New Friends Colony, New Delhi-110 065.



etc are completed. He is also assured that if he wants, he can make some additional money by tuitions etc and he can make more money than an IAS or a business executive while paying income tax on his salary only. His standing in the profession will be determined by his seniority rather than by his teaching or by results of his students. His mind is perfectly at ease and he can do whatever he likes, academic or unacademic and he is free to pursue his own interests. The teachers in developed countries can only envy the great freedom he enjoys. He has not to correct assignments or tests, he has not have office hours, he does not face inconvenient questions from his students about their difficulties or about the way the students' papers are marked.

### **Liberated Students**

Again, consider the case of students. The poor students have to face examinations, but only once in a year instead of once every week, that students in other countries have to face. Moreover instead of the students being required to answer all questions in a paper, as in other countries, our students have to answer, in general, any five questions out of twelve in the paper and again no body can dare to set a question which requires thinking (A teacher once confessed that in his 30 years of teaching he had never felt the need of thinking). Thus the students' mind is at ease for 10 months in a year. He is of course in tension for two months in a year because we have agreed only to dilute the examinations, but have not agreed to abolish them all together. Many persons have even argued that copying should be allowed in examinations, because this will allow students from backward classes to compete with others on a level field, otherwise examinations become an important means for perpetuating inequalities in society.

### **Liberated Research Scholars**

Consider again the case of liberated Ph.D. degree scholars. In many universities there is no course work requirement, no submission of research projects to screening committee and no comprehensive examination. Of course the requirement of a thesis is there, but this is usually examined by 2 or 3 sympathetic examiners. Even if some examiner rejects a thesis, the university is prepared to appoint another examiner to recommend award of the degree. Every candidate is sure to get the degree and he is assured by his supervisor that he would do his best to get him the degree, specially because it is in the personal interest of the supervisor to get him the degree. In spite of this liberal attitude in granting Ph.D. degrees or perhaps because of this attitude, the UGC gave

up the requirement of a Ph.D. degree from lecturers. We have the unique distinction of appointing average master degree holders (whose knowledge is quite often equivalent to that of undergraduate degree holders of developed countries) as teachers in colleges and universities. What greater liberal attitude to teaching at the highest level can we have?

We have already liberated our teachers from any fear of assessment. Managing committees, executive councils, principals, vice-chancellors cannot assess them because they are supposed to be biased. Sometimes confidential reports are written about teachers in government colleges, but anybody who writes an adverse report may himself be asked to explain why he wrote that report. Students cannot be allowed to assess their teachers because they are immature and can go by caste or other personal considerations. Of course if they are above 18 years of age, they can cast their votes to elect MLAs and MPs but that is another matter. And the climax comes when the teachers do not even trust themselves to assess themselves. Even self assessment forms are seldom filled.

### **Liberated Accreditation System**

At the initiative of the UGC a voluntary scheme of accreditation of colleges and universities was started. The scheme made slow progress and even when it was implemented, it could not be successful because there are no instruments to assess the most important activity of these institutions i.e. teaching. Most educational administrators are already liberated from the fear of their work being assessed.

We have also liberated our students from fear of monthly or even 6 monthly tests. For at least 10 months in a year, they can have a tension-free life. Of course some students in the system really liberate themselves. Realising that there may not be much worthwhile teaching, they take upon themselves the responsibility for real learning and do very well in the examinations and in life, thus establishing beyond doubt the great merits of a liberated educational system.

### **Philosophy of Nishkam Karmayoga in Education**

And where else in the world can a liberated educational system work except in the land of the *Gita*, our government believes in *Nishkam Karmayoga* of establishing new schools, colleges and universities without worrying about whether good education is taking place or not. Our teachers do the *Nishkam Karmayoga* by delivering lectures even to half-empty classes, because it is their duty to give lectures without worrying whether the students are benefitting

in terms of good learning and how can they know when there are no quizzes, assignments, weekly or monthly tests or projects. Our students do *Nishkam Karmayoga* by going to colleges regularly and attending some classes. They are not worried about the fruits of learning.

However it is not perfect desirelessness of fruits. Politicians are interested in fruits of the power that the liberated education system gives them in appointments, promotions and transfers of teachers. The liberated education system gives them the greatest source for obliging friends and even sometimes making some money in this process. In government colleges large scale transfers are made and cancelled after sometime, but in this process a large number of teachers and friends are obliged. Teachers are very much interested in the fruits in terms of a raise in salary scales. Their associations are fighting for these fruits almost throughout the year. Students are very much interested in the fruits in terms of degrees, whether fairly earned or not.

No, our education system is not observing the philosophy of *Nishkam Karmayoga*. The fruits are very much desired in terms of power to do favours, gettings higher salaries and getting degrees without putting in hard work. The fruits of excellent education, excellent learning, excellent teaching, internationally competitive educational system are all considered as idealistic and not realistic. Let these fruits be given to students and teachers of developed countries. We are very much satisfied with our truly liberated educational system.

#### Which is More Important : Liberty or Efficiency?

We have an ideal education system based on the principles of freedom, liberty, equality and fearlessness. Our teachers are completely free of the fear of being assessed by their students or the administrators or peers. Our students are free of the fear of daily quizzes, assignments, time-bound projects and can enjoy life for 80% of the time. Our research scholars are not accountable except for final thesis after 3 or 4 years. Our educational administrators cannot be questioned by anyone for their performance. Since learning takes place best in an atmosphere of freedom, our system should be the best in the world.

The students and teachers of developed countries may work for 2000 hours in a year while our students work on an average for 300 to 400 hours in a year. However our students and teachers have more freedom than the students and teachers of those countries.

The Western education system is no doubt 3 or 4 times more efficient than our system, but our students and teachers have 3 or 4 times more freedom than what students and teachers have in these countries.

We have decided in favour of liberty as against efficiency. We may be 50 years behind times in the efficiency of our system, but we do not care. We believe in the great freedom of the students to learn as much or as little as they like. We have given freedom to the teachers to teach as much or as little as they like. We have given freedom to our research scholars and research professors to do as little or as much research as they like. We have given freedom to the educational administrators to be as fair or as unfair as they like. We are not going to give up our freedom for the sake of efficiency. We have a liberated education system. We shall defend our liberty with all the force at our command. We shall ignore those who believe in standards and scholarship and learning, teaching and research of high quality. Our student unions, teachers associations and politicians are all united in defending the freedom we have granted to ourselves in our education system. □

## UNIVERSITY NEWS

A Weekly Journal of Higher Education

### Subscription Rates

	Inland		Foreign	
	Institutions	Academics/ Students	Airmail	Surface Mail
	Rs.	Rs.	US \$	US \$
1 year	400.00	175.00	140.00	100.00
2 years	700.00	300.00	260.00	180.00

Single Copy : Rs. 9.00

Subscription is payable in advance by Bank Draft only in favour of Secretary General, Association of Indian Universities.

Advertisement tariff available on request.

Address Subscriptions & Enquiries to :

Sales and Publication Division  
**Association of Indian Universities**  
 AIU House, 16, Kotla Marg,  
 New Delhi-110002.  
 Fax 011-3232131 GRAM : ASINDU  
 E-Mail : aiu@del2.vsnl.net.in  
 Website : <http://www.aiuweb.org>

# Tasks Ahead in Teacher Education

K. Walia\*

Teacher education system in India is one of the biggest systems globally and is expanding. The demands on the system could be increasing in the next decade both in terms of preservice teacher education as well as inservice education of teachers. This would also be the period to attend to the training needs of a large number of para teachers who have either been appointed during the last couple of years or are in the process of being recruited ostentatiously with a view to universalise elementary education in the remote and far flung and tribal areas. One of the major plea put forward in favour of recruitment of para teachers is the non-availability of local trained teachers from the same area and unwillingness of trained teachers from elsewhere to take up the assignment in difficult conditions and remote areas. There is also the issue of regional imbalances in providing trained teachers while certain areas have a large number of qualified trained teachers who are unable to get jobs even after couple of years of acquisition of training qualification, thus leading to a serious training loss in the intervening period. Provisions for induction training of para teachers are inadequate even if the rationale for their recruitment appears to be logical.

These, however, are mainly the problems of management of the system and an issue of identifying the correct priorities and strategies of manpower planning. Several areas relating to quality enhancement of teachers education programmes also have to be looked after by the system. Visible deterioration in the quality has attracted attention all around. As such in the years to come relevance of teacher education, its credibility and enhancing professionalism within the system and internalising it in every individual, would have to be given adequate consideration both in policies and practices. The teacher education system of the present must internalise socio-economic context, developments in science and technology, expansion of elementary education and pre-dominance of economic pursuits over the spiritual aspirations of the people.

Teachers at present are appointed like functionaries in any other department and are governed by

specified service conditions, rules and regulations. Consequently, some of the established values which have been identified with the teaching-learning process have got shifted to the oblivion. It will have to be ensured in the process of teacher preparation that student teachers imbibe a sense of pride in the Indian tradition and values associated with teaching. Teachers are role models for the community and more effectively for the learners. They have to be reminded of this part consistently. High level of professionalism has to be brought into the system and has to be coupled with inculcation and nurturing of values amongst student teachers.

It is a general impression that learner attainments are not significantly effected by teachers being trained or untrained. There are, however, instances, which question such findings. The issue needs to be resolved with indepth studies and analysis for the benefit of the system itself and also for awareness of parents and community. It is essential that teacher education system establishes its credibility like legal and medical profession which very clearly demarcate between the well-trained professional and novice. Unless and until, the rigour, skills, and adequate duration become integral part of teacher preparation system, such a credibility and acceptance from the community could not be forthcoming. A trained teacher must be aware of the competencies and skills that would distinguish between the untrained or under-trained teachers. The curriculum of teacher education, content of the syllabus, practical activities and practices need to be examined in this context also.

There is serious dichotomy of practice and preaching in the teacher education system. It is the irony of situation that when student teachers and their supervisors develop lesson plans for practice teaching and transact these in the school system, they are aware that in an actual practice these can never be prepared in schools. It is not difficult to find teachers who would categorically state that they have not been benefited by the training imparted to them in the teacher training institutions. It is said that teacher education has not made serious effort to establish synchronisation between the policies and practices. It is not rare to observe in training institutions, lectures being delivered on educational technology without use being made of the same or a lecture be-

---

\*Research Officer, NCTE, C-2/10, SDA,  
Sri Aurobindo Marg, New Delhi-110 016.  
Phone : 6561349, Fax : 91-11-6968492

ing delivered on activity method or demonstration method without the teacher educator giving any demonstration or performing any activity. These situations can be remedied at the institutional level without the requirement of any financial input from external sources. A collective will for the same has to be inculcated and concretised.

A large number of training institutions still work as islands of isolation. While some attempts have been made to develop institutional linkages much more needs to be done. Identification of resource institutions and their role have been mentioned in policies for quite sometime. Establishment of DIETs, CTEs and IASEs are clearly the steps in the same direction. Even within the universities and colleges there is a need to establish linkages so that the developments in other areas can be brought into the course content and the curricula of teacher education. Can teacher education ignore the developments in the areas of mental health, neurological sciences, emotional development of children, economic changes, globalisation, liberalisation and others? The content of teacher education shall have to undergo drastic transformation in the years to come. To achieve the same, expertise has to be brought from different disciplines on regular basis, as a process of curriculum renewal would have to become much faster as compared to the pace of the past.

The breaking of isolation from the community is essential for enabling teachers and teacher educators to reconstruct pedagogical and educational principles and practices in the light of experiences gained from mutually beneficial institutional community interactions. Teacher as a professional and as an intellectual cannot remain indifferent to the events that are taking place in society. The academic and social issues are inter-related and inter-dependent. In contemporary context, the role of the teacher is no longer confined to teaching alone. The teachers are expected to play an active role in the developmental activities responding to progress of the community.

The Indian experience in correspondence and distance education strategies in teacher preparation has unfortunately not been very encouraging. However, things are changing fast and the next decade could be characterised by enormous use of distance learning techniques. A general overhauling in the strategies in imparting both preservice and inservice education using new information technology are being planned and experimented with a view to ensure that preservice teacher education is augmented

through the use of distance education mode. It would also help in reaching to large number of teachers in remotest areas which is our prime requirement. Once these strategies are internalised in the system, it should be possible to provide opportunities for recurrent inservice education within short duration to all the teachers on regular basis. Our student-teachers and trainees in the inservice education programmes need to be clearly informed that they will have to renew the content knowledge and skill orientation regularly. They also have to be prepared to acquire new competencies without any hesitation, as otherwise they would not be able to keep pace with the changes in the curricula at each stage of school education. All strategies of teacher orientation need to emphasise continuing education further and prepare them for life long learning utilising the strategies of self-motivated and self-directed learning in addition to the systemic orientation opportunities that may be available to them.

Teacher education systems, world over, are known for their rigidity and unwillingness to change. Such systems would not survive and face the challenges of the next decade. It is essential that the course content of the teacher education system is developed on the basis of researches and studies particularly in the specific regional and local context. Innovations and flexibility would be the hallmarks of teacher education in the years to come. While general levels could be identified to ensure uniformity. It would be essential that teacher educators and student teachers learn how to develop local specific curricula to utilise local resources and bring in local and regional content in the process of teacher education.

Teacher training institutions are the key institutions which determine level and quality of teacher education in India. If these institutions function at a high level of efficacy, the multiplier effect would reach every school in the country. In case, it is not so, the quality of education and performance of teachers in Indian school would not be of the desired level. One teacher reshapes the life of thousands of young persons during the career of thirty to forty years. Any lacunae in preparation of these individuals in training institutions would cost the country very dearly. The state and the community must realise the necessity of imparting primacy to teacher training institutions in assisting them to discharge their functions efficiently which are not confined to mere training of certain individuals but to reshape the society and future of the country. □



# Universities, Researches and the Affiliated Colleges of Assam

Parveen R. Akhtar\*

Higher education in India has acquired special significance since independence. This significance is to be gauged in terms of what the society expects from it and the fulfilment of these expectations from the initiators of higher education. In this respect, the role of the universities seems to be significant. The universities have always believed the direct participation by way of providing needed leadership in the transformation of society. The universities have, therefore, been setup not only to uplift the society for which they exist but there are many ways by which it could play a dynamic role to deal with the emerging problems in developing a society. If this role is emphasised, it may become a highly differentiated one, due to the fact that, problems in developing countries are unique due to their very nature and therefore, solutions to these problems shall have to be made more intelligently and objectively in the light of conditions prevailing at specific points in time. While participating in these activities traditionally the universities make continuous and sustained efforts in three major dimensions, viz. teaching, research and extension work. These academic objectives of a university have to be seen in a changing context of national developmental programmes in all walks of life. There is no gain saying fact that, teaching in universities play a significant role in fulfilling the functions but for creativity and frontiers of knowledge, researches also go hand in hand with the teaching.

Any research activity whether science, humanities or social science by definition is a kind of activity aimed at solving certain problems. For example, if we take up the area of educational research, the rationale will remind its contributions to make decision-making process scientifically sound and educationally most responsive to the needs of human development and social progress with the identified areas like curriculum, teaching, technology of teaching, educational management, social impacts on education etc. By nature, education and its process are intimately related to individual development and social progress and therefore, any educational re-

search has to clarify the perspectives in terms of (1) why educational research, (2) what are the constraints involved in the process and (3) what is the appropriate methodology to be adopted.

Researches in any area of discipline needs careful, critical and exhaustive investigations to discover new facts which will test a hypothesis, revised & accepted conclusions or contribute positive values to society in general. It needs guidelines in the research procedure. A beginner in research may have to undertake an intellectual reorganisation so as to interpret his field of specialisation in the form of problems to be solved. The problem must be such that, research could be conducted with the available facilities. Once a problem is selected, actual research work should not begin until a good judgement on its practical or utilitarian significance is obtained.

The formulation of research is the blue print of any research work. The blue print needs the following heads which are essential for any scientific research work, (1) statement of the problem, (2) review of the related literature, (3) definition, (4) delimitation, (5) hypothesis, (6) sample, (7) collection of data, (8) analysis of data, (9) interpretation of the data, and (10) report writing.

In the light of the above discussion, the role of the universities of Assam in promoting researches in its affiliated colleges needs a careful reading. Presently, Assam is having five universities, out of which two are state level universities, two central and the other is Agricultural university. The total responsibility of progress in science, technology, agriculture and humanities depend on the shoulders of these five universities. As it is very clear to all the conscious and alert educationists and scientists that there are different types of universities viz., unitary, teaching and affiliated universities which cover state, central, deemed, agricultural and technological institutions. It may be mentioned that the affiliated universities have some special features namely, that the teaching is conducted in the affiliated colleges and the examinations are conducted by the universities. Teaching at the undergraduate stage is mainly the responsibility of the affiliated colleges. These affiliated colleges are of two types affiliated colleges with the defi-

---

\*Lecturer, Selection Grade Department of Education, Cotton College, Guwahati-1.

cit grants and colleges without the grants situated in the urban and rural areas. In Assam, the three affiliated universities viz, Gauhati, Dibrugarh and Assam University are functioning with a large number of affiliated colleges. The affiliated colleges under these universities have mainly three sections — arts, science and commerce with limited or unlimited number of students. The actual picture of the official and teaching staff differs from college to college. Colleges situated in the urban areas have better physical facilities than the rural areas. But the overall courses offered and the programmes undertaken from UGC do not differ along the rural colleges. The teaching staff of both the category of the colleges must have the requisite qualifications. As the M.Phil or Ph.D. degree has become a must for college recruitments as directed by UGC, the field of research activities has taken a new turn. Its main aim is no doubt to get qualitative improvement of the college teachers. In this juncture, the three affiliating universities of Assam is to contribute research for the national development. They should train the teachers in a research oriented way with cooperation among the variety of disciplines for solving different problems. In comparison to the advance universities of India, Assam is still in its initial stage. The universities, the affiliated colleges and its incumbents have a great role to play in this respect. These universities should extend its helping hand to the researchers in such a way so that a teacher can avail the maximum benefit out of it. The interested teachers of affiliated colleges should be extended all the possible help in their pursuit of research activities. In this respect provision should be made elaborately to give facilities of guideship to postgraduate department teachers as Research Guide from the affiliated colleges. To create an atmosphere in preliminary and advanced level research methodology, seminars/workshops should be arranged by the innovators of the universities. More of such seminars etc will culture the minds of the college teachers as they can meet and exchange their ideas among themselves. The universities should take extra care to intimate the affiliated colleges well in advance about the national seminars, symposium etc. It will help the interested teachers to prepare for such seminars, symposium etc and attend it. There should be some special provisions for college teachers including financial grant to facilitate them to attend the national seminars etc. Again there should be some instructions from the Government as well as from the universities to the affiliated colleges to allow the inter-

ested teachers with pay and duty leave to attend such seminars etc and a report should be made available to the concerned authority to this effect. While assessing a teacher's efficiency this should be taken into consideration. This involvement will create an atmosphere to widen their knowledge, outlook and acceptance of innovative methodology and also it will discourage the biasness of the different governing bodies. The universities can take up a few short term or long term research project with the help of the postgraduate teachers and the teachers of affiliated colleges. It can be made in an interdisciplinary approach. Interdisciplinary approach of research will help the universities to make a congenial relationship among different departments and different colleges. In this respect the postgraduate teachers can extend their maximum help to the affiliated college teachers. Another most important phenomenon is the establishment of centres of advanced studies in different subjects for effective and modern research in the State of Assam. At present many of the Indian universities have already acquired the facilities to function the Centres of advanced studies attached with the postgraduate departments for creative works. This will lead to scientific research in the state. Assam universities are in a developing stage and they are yet to achieve final goal. The circumstances demand more involvement of both the universities with organisations like ICSSR, ICHR, ICMR, ICAR, CSIR and UGC etc as they are the suppliers of the financial machineries for the educational institutions. Here it is to be mentioned that the role of U.G.C. in the financial assistance towards teachers is very positive and encouraging.

Last but not the least, an all out effort should come forward to accommodate the broad based research activities giving more importance to indepth and intensive studies will cater the need of the country in general and of Assam in particular. Let us wait to achieve the goal in the 21st Century.

#### References

1. Akhtar, Parbin Rabia, 1981. *A Critical Study of the Semester System in Selected Universities in India*, Ph.D. Thesis. CASE. M.S. University of Baroda.
2. Ary, Donald, et. al., 1971. *Introduction to Research in Education*. Hold Rinehart and Winstone, INC, New York.
3. Jaygopal, R. and Nagarjan V. M. 1976. *Methodological Problems in Innovating System*. Journal of Higher Education, Vol. 2, No. 1 Monsoon.
4. Joshi, N.C. 1978. *Perspectives of Higher Education*, Asia Publishing House, New Delhi.
5. University Grants Commission : *Bulletin of Higher Education*, Vol. 1, No. 1, New Delhi, April, 1978. □

---

## CAMPUS NEWS

---

### Interactive Techniques for Distance Education

The Indira Gandhi National Open University Regional Centre, Shimla in collaboration with the International Centre for Distance Education and Open Learning (ICDEOL) of the Himachal Pradesh University jointly organised a two day National Seminar on "Interactive Techniques for Distance Education" during 27-28 October, 1999 at Shimla.

Dr. D.B. Negi, Regional Director, in his welcome address, underlined the importance of Distance and Open learning system in the fast changing scenario throughout the world. He said that in the recent 13th AAOU Conference held at Beijing, key speakers were of the view that 21st century will pose great challenges for distance and open learning system to cope up with rising expectations of knowledge-based society. This adoption of appropriate learning technology provided special focus for the present seminar. Dr. S. Ganesan gave a brief background of seminar while Dr. Jagdish Sharma anchored the proceedings.

In the Inaugural address, Prof. P.K. Mehta, PVC, IGNOU noted that, by the end of the year the number of study centres of IGNOU will rise to over 500. He revealed that IGNOU was negotiating with NGOs and local bodies all over the country to take IGNOU programmes to the disadvantaged groups. He added that all the study centres and programme centres will be equipped with multi-media computers, Internet facility and telephones for improving the quality of student support services.

In his key note address, Prof. Lokesh Koul, mentioned that the biggest challenge before the third world was the removal of illiteracy in 21st century. The gap between have's and have not's was further widening even in terms of basic education, because of peculiar socio-economic conditions prevailing in the country. He specially stressed the need for reaching distance education programmes for the poor people, tribals, disadvantaged groups and geographically remote, inaccessible & disaster prone areas.

Prof. Giriraj Kishore, Sr. Fellow, IAS, in his address emphasised the need of education to reach the common man. The mass-media had failed in India to play a crucial role, though it played an important role in some countries to overcome the hurdles of illiteracy. He underlined the need of Indianisation of the present education system and said that lack of proper communication was a bottleneck in reaching the neglected sections of the society. He praised the role played by the IGNOU and the All India Radio in disseminating education to masses but regretted the poor role of Television in the present context.

There were six technical sessions in which 30 papers were presented on the sub-themes : Technological Support Services and their use in Distance Education; Interactive Software and Electronic Mass-Media for Distance Education; Human Element in Student Centred Open and Distance Learning; and Management of Programme Delivery system through

sharing of Organisational Resources and Collaborative Learning. Each presentation had a good amount of academic interaction with the delegates. Participants from Kerala, Karnataka, Shillong, Maharashtra, Orissa, M.P., U.P., Rajasthan, Delhi, Punjab and H.P. attended the seminar.

The following issues emerged from the deliberations of two day seminar:

- Need to devise appropriate medium and language for interaction keeping in view the heterogeneous nature of population.
- Greater emphasis on indigenous technology to meet local needs, resources and availability.
- Sharing of resources, partnership and collaboration between conventional and distance learning institutes.
- Technology available with IGNOU be made accessible to other institutes too.

Dr. Sridhar, Director, Electronic Media & Production Centre (EMPC, IGNOU) disclosed that IGNOU in collaboration with Doordarshan was shortly launching 16 hours educational programme. He said that EMPC was ready to offer its services to and for collaborative programmes with other open universities and conventional universities on no profit-no loss basis. He said that IGNOU offered technical know-how to other interested institutions in the field of production of Audio-Video programmes through DEC.

In his valedictory speech, Prof.

S.K. Gupta, VC, HPU stressed the importance of collaborative approach of IGNOU and said that technical collaboration was its important aspect.

### **Biodiversity Conservation & Biotechnology**

XXII annual conference of All Indian Botanical Society and National Symposium on Recent Advances in Plant Science—The role of plant sciences and their relevance to Biodiversity Conservation and Biotechnology was held at Mithibai College, Mumbai under the aegis of University of Mumbai on 23rd-25th October, 1999. Inaugurated by Dr. (Mrs.) Snehalata S. Deshmukh, Vice-Chancellor, University of Mumbai, the conference was presided over by Prof. K.S. Manilal, President of Indian Botanical Society. The welcome address was given by the Organising Secretary Dr. R.H. Shete and Professor S.V.S. Chauhan, Secretary, Indian Botanical Society presented a brief report on the activities of the society.

Professor K.S. Manilal delivered the presidential address on the topic entitled "Floristic studies in peninsular India: Their socio-economic relevance". During the conference, society awarded four medals to Prof. J.S. Singh, Varanasi (Birbal Sahni Medal), Prof. P.S. Bisen, Bhopal (Panchanan Maheshwari Medal), Prof. R.N. Trivedi, Patna (V. Puri Medal) and Dr. (Mrs.) Sonali Chaturvedi, Allahabad (Y.S. Murty Medal). Prof. J.S. Singh delivered a talk on "Global Warming: Causes and Consequences; Prof. B.S. Bisen talked about "Nitrogen Metabolism in Cyanobacteria"; Prof. R.N. Trivedi spoke on "Cytogenetics of the family cucurbitaceae", while Dr. Sonali Chaturvedi delivered her medal award lecture on "Micromorphology and vegeta-

tive anatomy of leaves and reproductive parts of the Conifers".

Professor Dalbir Singh (Jaipur) delivered Kajali Memorial lecture on "Seed structure: Application and further Prospects" and Prof. R.M. Pai (Aurangabad) delivered Prof. G. Panigrahi Commemoration lecture on "Evolutionary Trends in the flowers of certain sympetalous taxa". The conference was attended by 457 participants from all over the country.

Amongst others Prof. H.Y. Mohan Ram, Prof. K.R. Shivanna (Delhi), Dr. Pushpangadam (Director, NBRI, Lucknow), Dr. K.N. Ganeshaiah (Bangalore), Dr. S.K. Sapory (New Delhi), Prof. Mehar Homji (Mumbai), Prof. S.P. Vij (Chandigarh), Dr. U.C. Shrivastava (NBPGR, New Delhi) participated in the symposium where a total of twelve lecturers were delivered.

There were 16 sections of various fields of Plant Science for paper presentation and a total of 69 papers were presented.

The General body meeting of the society passed the following resolutions:

1. The members of the Indian Botanical Society are happy to note that the Ministry of Environment & Forests, Govt. of India has initiated steps to encourage capacity building in Taxonomy. We urge that considering the vastness of our country and its rich floristic diversity, this endeavour should be strengthened further and research projects for inventorization and monitoring plant diversity should be supported.
2. There should be live national collections of various groups of plants, authentically iden-

tified by experts for assisting general public, students, researches and industries. A beginning can be made with fresh water algae and gymnosperms.

3. Mapping of plant diversity using remote sensing data and supported by ground truth verification, of important plant species should be taken up as a national activity for which a marking plan will be prepared and submitted.
4. Quantitative data should be collected to substantiate the environmental status of species diversity (using IUCN criteria) for updating the Indian Red Data Books.

### **Avinashilingam Institute Convocation**

The Eleventh Annual Convocation of Avinashilingam Institute for Home Science and Higher Education for Women (Deemed University) was recently held in which 1230 graduates were conferred degrees.

Dr. V.C. Kulandaiswamy, Former Vice Chancellor, Indira Gandhi National Open University, New Delhi, in his convocation address praised the achievement of the students. He stressed the need of value based education and wished success to the students.

Dr. Rajammal P. Devadas, Chancellor, Avinashilingam University in her address blessed the graduates and invoked upon them the blessings of God for a bright future.

Thiru K. Damodharaswamy Naidu, Chairman, Sri Annapoorana, Sri Gowri Shankar Group of Hotels was conferred the Honorary Degree of Doctor of Literature for his selfless service to the Society as an entrepreneur.



Thiru B.K. Krishnaraj Vanavarayar, Chairman, Bharathiya Vidhya Bhavan was conferred with the Honorary Doctor of Laws for his service to the humanity.

Students who had finished their undergraduate, postgraduate, M.Phil. and Ph.D received their degrees. They pledged to serve the society with the due honour and love.

### **Towards Global Competitiveness**

India has a legitimate right to lead the movement for global competitiveness in the next millennium, which is poised to be a century of the mind, said Secretary, Department of Scientific and Industrial Research R.A. Mashelkar. He was inaugurating a national conference on 'Information Today and Tomorrow : Towards Information Content for Global Competitiveness' jointly organised by the National Information System for Science and Technology, DSIR, Ministry of Science and Technology and the Indian Institute of Chemical Technology (IICT).

He said the future would be an era where the products of mind would determine the competition either at individual or global level. With its genetic background and richness in intellectual capacities, India is all set to gain a firm lead in global competitiveness. It should make the best use of IT, a technology which benefits only those societies which are willing to change.

He said with the advent of IT, the world had started witnessing transformation in the way of communication across the globe and dealing with the available information, the process of learning, practice of health care, growth of companies, the nature of

workplace, understanding of the environment and finally the governance. Maintaining that the country had so far depended more on the West for research and development, he said the focus should be development of indigenous content.

Indian Institute of Information Technology, Hyderabad Director Dr. Narendra Ahuja, in his keynote address, said that IT had an advantage of being close to the human mind — the quality which the earlier technologies lacked — and help in bringing a social change. Though the country has a well documented Constitution, large administrative infrastructure, massive workforce and rich heritage, the accepted social code of conduct was not followed and there was a lack of identification with advantages. Dr. Ahuja said that industrial productivity lagged behind compared to our counterparts in the West as the quality suffered due to unsatisfactory work ethics. "While the industries in the rest of the world are inventing creative ways to overcome the hurdles, we lost even the traditional advantage we enjoyed in traditional industries such as textile, jewellery and leather. The efficiency and quality of the industry can be improved with the effective use of IT," he said.

He said micro-level checking of compliance to traffic rules, improving police accessibility, monitoring of development through Geographical Information Systems, developing community interaction and providing rural and basic education through distance education were some of the advantages of IT. Stating that a concerted national effort should be made for development through IT, he said a mission of identifying IT-compatible problems, subsequent formulation of approaches and over-

seeing their implementation was the need of the hour. IICT Director K.V. Raghavan welcomed the gathering and A Lahari, Adviser Nissat, explained the theme of the national seminar.

### **SIS 2000**

19th Annual Convention and Conference on "Information Management in New Millennium" is going to be organised by Society for Information Science (SIS) during January 27-29, 2000 at Indian National Science Academy (INSA), New Delhi.

The topics proposed to be covered include Electronic Resources and Data Mining, New Technology for Internet & Information Infrastructure, Marketing of Electronic Information Resources, Emerging issues in Scientometrics/Informatics. Papers on these and related themes are welcome.

A two-day pre-conference tutorial on (i) Internet Services and Resources & (ii) Web Page design is being organised at INSA, New Delhi, for the benefit of the participants. The pre-conference tutorial will be held on 24th & 25th January, 2000.

During the conference, an exhibition of hardware, software and other library materials will also be arranged.

The extended abstracts not exceeding two pages must reach the Organising Secretary on or before 15th December 1999 (Authors having E-mail address should send abstract via E-mail in order to save time). Authors of the accepted abstracts will be intimated before 20th December 1999. Articles of not more than 15 pages should be drawn separately on A4 size tracing sheets. The full text of the accepted papers must reach the Organising Secretary by 5 Jan. 2000.

Contact : Dr. (Mrs.) Usha Mujoo-Munshi, Organising Secretary, Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110 002. Email: sis2000@yahoo.com

### **Indira Gandhi Memorial Fellowships**

The fourth Indira Gandhi Memorial Fellowships for the year 1999 have been awarded to historian Dr. K.S. Behera and art-historian Dr. Nalini Thakur.

The annual fellowship given by the Indira Gandhi National Centre for the Arts carries a monthly stipend of Rs. 12,000.

Head of the Department of Architectural Conservation, School of Planning and Architecture, Ms. Thakur would work on the project 'Generating Knowledge Systems for Regeneration of Indian Historic Cities'. Dr. Behera, Professor of Ancient Indian History, Culture and Archaeology, Utkal University would work on the project 'Bhubaneswar Lingaraja — A Multi Dimensional Study.'

### **Dr. Mony Honoured**

Mr. P.G.S. Mony has for the second time been awarded the insignia of "officer" in the order of "Palme Academique" (officer in the knighthood of academic achievements), a decoration normally bestowed upon French citizens.

The French Minister for Education, Research and Technology, Mr. Claude Allegre, conferred the award at a brief function at the French Embassy in New Delhi on behalf of the French Government.

Mr. Mony was given the award in recognition of his contribution "towards the coordinated efforts for furthering Indo-French

cooperation in frontier areas of science and technology."

Mr. Mony, who is the Director of the Indo-French Centre for the Promotion of Advanced Research (IFCPAR), was earlier awarded the insignia of Chevalier Knight in the order National du Merite (meritorious order of the nation) in 1994.

Born in Kottarakara, Kerala, Mr. Mony was a member of the team that designed India's first atomic power station in Tarapur.

He then served as science counsellor in the Indian embassy in Paris before he became founder Director of IFCPAR.

### **Indo-French Co-operation in S&T**

The French Minister for Education, Research & Technology, Mr. Claude Allegre has said that France looked forward to greater cooperation with India in both science and technology and education.

In the field of science and technology, the plans for the immediate future included establishment of a set of joint laboratories that would focus on research on aquifers; geophysics and geochemistry of surface water; computer-assisted company modelling; mathematical modelling and computer stimulation; laser physics; applied biocomputing; animal genetics; ion accelerators; and water treatment.

In the field of education, on the other hand, steps have been initiated to increase the number of scholarships for Indian students, so that more Indian students came to France for higher studies.

The plan was to offer as many as 200 scholarships for Indian students alone by next year, he added.

Mr. Allegre said a satellite for

climate research would also be developed jointly by the two nations. Called "meghatropiques," the satellite would be helpful in forecasting floods, hurricane and landslide.

The developmental cost of the satellite, expected to be launched by 2005 using indigenous polar satellite launch vehicle, would be shared by the Indian Space Research Organisation (ISRO) and its French counterpart, CNES.

Mr. Allegre is visiting India with a team of over 30 scientists. Both the countries have agreed to set up a research facility at the National Geophysical Research Institute (NGRI), Hyderabad, for identifying new ground water reserves in India. Six scientists, three from the Indian side and three from France, would work on a three-year project towards this end.

The Institute of Research and Development of France and Indian Institute of Science (IISc), Bangalore would conduct joint research on water technology and management.

### **South Asian Education Conference**

Education must go together with basic human values and teachers must set an example for their students through action and deeds, not merely words, said the Dalai Lama, the spiritual and temporal leader of Tibetans. There is too much stress on developing the mind and too little on developing a "warm heart", he said, while delivering the valedictory address at the conference "Education in the South Asian Context : Issues and Challenges" organised by Delhi University's Education Department.

Education should be used to

bring more happiness and meaning into life, to narrow the gap between perception and reality. Education with basic human values will be constructive and beneficial for society, said the Dalai Lama.

"We need to develop a sense of caring for one another, a sense of belonging to the community, a sense of respect for each other...the more compassionate you are, the more healthy is your mind," he said, adding all humans must think in terms of a global responsibility.

Stressing the need for analysis in all fields, the Dalai Lama added, "By just relying on information provided by teachers and books, and not individually investigating, our knowledge becomes like a tape-recorder...we must utilise our own potential."

Lauding India's culture of non-violence and religious tolerance, the Nobel laureate said care must be taken to ensure these rich traditions are nurtured and preserved in the country.

The five-day conference was attended by around 120 delegates from India, Bangladesh, Bhutan, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka.

"The conference raised issues from the pre-school stage to higher and technical education...no stage of education was left untouched," said Anil Sadgopal, head and dean of DU's faculty of education.

Participants, among other things, discussed constitutional and legal status of education; policy perspectives and historical experiences in education.

There was amongst the delegates a consensus, that it was critical to continue a dialogue on the issues of education in the South Asian region. This would

"prepare us both to phase and mitigate the negative impact of the market economy and globalisation."

Dr. Sadgopal, said that continuous dialogue could be sustained by networking amongst the educationists, teacher educators, teachers and social activists of countries in the South Asian region.

Proposals for moving towards this goal included the setting up of a moving secretariat from one country to another so that it could organise similar interactions regularly.

A South Asian Documentation Centre in the Education Department of Delhi University, focusing on specific themes or issues through study groups which will bring together academic and social activists, would also be set up.

Among the major recommendations of the conference was the universalisation of elementary education, that is, education for a minimum of eight years, for all South Asian countries.

It was further recommended that the policies of these countries needed to be changed in order to transform the quality of and access to formal education rather than to divert peoples attention from this goal through literacy campaigns and parallel streams such as non-formal education, alternative schooling etc.

With regard to rapid increase in the international funding of primary education, the conference expressed concern that the conditionalities attached to the agreements between the respective governments and the funding agencies have not been made transparent. As long as this policy of secrecy is maintained, the international funding will remain suspect.

The conference also called for an immediate increase in allocation of funds to education within the national budgets of the respective countries, in contrast to the present trends of increased allocations to the defence sectors.

The trend of giving preference to elementary and primary education, at the cost of higher education, was also deemed as dangerous by the conference, Dr. Sadgopal added.

### **75 Institutions Assessed by NAAC**

The National Assessment and Accreditation Council (NAAC) has completed the assessment of around 75 institutions and the institutional grades have been announced for 55 institutions — 3 universities and 52 colleges from all over India. The list of assessed institutions includes Pondicherry University, Avinashilingam Institute of Home Science and Higher Education for Women, Madurai Kamaraj University, Birla Institute of Technology and Science and University of Roorkee. University of Mysore will find a place in this list soon, after the visit of the assessing team to the institution scheduled for 20th to 24th December 1999. By end of this year, the number of institutions assessed by NAAC will reach 100.

With the UGC's decision to extend financial support to meet the accreditation cost to all the institutions of higher education, more number of colleges are coming forward for accreditation. All the 170 or so universities that come under the purview of UGC and the associated autonomous colleges numbering (120) are expected to undergo this assessment before the end of the current plan period i.e. within the next 2 years.

## Training Science Teachers

The Indira Gandhi National Open University (IGNOU), School of Sciences recently organised the UNESCO regional training course in University Science for 25 colleges and university teachers of Bangladesh, Iran, Maldives, Nepal, Pakistan, Sri Lanka and India.

Prof. S.K. Joshi, an eminent physicist and former Director General of CSIR, inaugurated the course with a lecture on "Challenges in Science Education in the 21st century".

Several eminent scientists like Prof. Ashok Jain — Former Direc-

tor, NISTADS, Prof. A.R. Verma — Former Director NPL, Dr. D.K. Biswas — Chairman CPCB, Orif R.K. Kochhar — Director NISTADS, Prof. K.B. Powar Secretary-General AIU, Professor K.V. Sane, Anil Sadgopal and Mrs. Panchapakesan, Delhi University.

Prof. N.K. Jha of IIT, Delhi addressed the participants on a diverse range of topics.

The main objective of the training course was to encourage the teachers to incorporate the ideas and concerns presented in the lectures into their teaching curriculum.

said that without these developments, a worthwhile progress in livestock production, on sustainable basis, was not possible.

Mr. Vinay Kumar, Vice-Chancellor, CCSHAU in his presidential address said that while devising productive and sustainable production systems our ultimate goal should be higher income, more employment and reduction in poverty. He said that the Indian economy was changing dramatically and the demand for animal products like milk and meat was rising with the rise in standard of living. To meet this demand, there was need to develop newer technologies which besides being cost-effective, were farmers and environment-friendly.

The VC regretted that developments in animal production and health care had not yet percolated to the farmers. To overcome the sustainability issues in different farming systems, he mooted the idea that universities and research organisations should create a new system where the research and extension efforts were based upon farmers participatory approach.

Mr. Peter Sewitz, Programme Officer, Max Mueller Bhavan, New Delhi, said that in the next century, the scientists would have to act more responsibly. While developing strategies to ensure food security, they would have to concentrate on various environment-related issues also.

Over 200 animal and farm scientists from India and 11 developed and developing countries like USA, Germany, Sweden, Italy, Egypt, Turkey, Bangladesh, Sri Lanka attended the conference, which was organised in collaboration with Max Mueller Bhawan, New Delhi and the Society for Sustainable Agriculture and Resource Management (SSARM).

---

## News from Agricultural Universities

---

### Sustainable Animal Production

A 4-day international conference on sustainable animal production, health and environment was recently held at CCS Haryana Agricultural University (CCSHAU), Hisar. The conference noted that third world countries would warrant an enhanced productivity on sustainable basis in the next millennium to provide food security to the growing population.

Inaugurating the conference, Dr. R.B. Singh, Chairman, Agricultural Scientists Recruitment Board (ASRB) said that in the third world countries, where land holdings were shrinking and crop farming systems were frequently threatened by natural calamities, the livestock can play a significant role for developing sustainable agricultural systems. But, quoting FAO estimates, he said that by 2010 the third world countries will have to produce 143 million tonnes of meat and 248 million tonnes of milk annually to meet the food requirement of the teeming millions.

For that growth rate of 3.8 per cent for meat and 2.5 per cent for milk has to be sustainably maintained, he added.

He said that it was also apparent from the fact that in third world countries, the combined per capita consumption of milk, meat and eggs from 1970 to 1990 had increased by 50 per cent and this trend was likely to continue till 2020.

Speaking on livestock production scenario in India, he said that though the country had set records to milk, egg, meat and wool production, yet their productivity levels were far below than those of many advanced countries. He held low availability of nutritious feed and menace of diseases responsible for this gap. Dr. Singh called upon the animal scientists to develop effective vaccines, improved method for carcass disposal, animal disease surveillance and monitoring methods as well as disease forecasting and biotechnological approaches. He



---

## News from UGC

---

### Countrywide Classroom Programme

Between 13th December to 19th December, 1999 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programmes are telecast on the Doordarshan's National Network from 9.30 to 10.00 a.m. every day except on Saturdays & Sundays. These programmes are also telecast on Doordarshan's National Network from 6.00 to 6.30 a.m. on all days of the week. On DD2 International Programme will be shown at 11.00 to 12.00 hours on Saturdays only.

**13.12.99**

"Y2K — Year 2000 Problem-1"  
"Preparation of Aspirin"  
"Forbidden Dreams"  
"Touch of Genius"

**14.12.99**

"महेश्वर : गौरवशाली अतीत का साक्षी"  
"Touch of Genius"  
"River Journal-1 : Historic Hoogly"  
"Vasundhara : Birds of Wetland"

**15.12.99**

"Feeling Good-14"  
"Communication Among Honey Bees"  
"River Journal-2 : The Portuguese in Hoogly"

**16.12.99**

"Some People Dream"  
"Question Time-120"  
"Triumph of the Spirit"

**17.12.99**

"Functional English-5"  
"Tennessee Williams — An Introduction"

"River Journal-3 : The Dutch in Chinsura"

"Louvre Museum"

**18.12.99**

"गावरी खेल और खिलाड़ी"

"Touch of Genius (Isaac Newton)"

**19.12.99**

"Understanding Cinema-15"

---

## News from Abroad

---

### Year of Dialogue Among Civilizations

The United Nations Year of Dialogue among Civilizations, to be observed in 2001, could provide to international relations an alternative language to that of the economist's market-driven view of world events, according to Richard Falk, Professor of International Law and Practice at Princeton University.

Speaking at the panel discussion on "Dialogue among Civilizations : a Call for Common Ground," held recently at the United Nations Headquarters, Professor Falk saluted the Year as a means to counter the potential materialism of the globalization process by emphasizing cultural and spiritual identities.

The panel, organized by the Permanent Mission of the Islamic Republic of Iran, was the second in a series leading to the International Year. The panel was moderated by Giandomenico Picco, Personal Representative of the Secretary-General for the United Nations Year of Dialogue among Civilizations who introduced the Secretary-General's interim report on the subject.

Ismail Serageldin, World Bank Vice-President, stressing the rising inequality both within and among countries, asked "how can civilizations talk with each other if they are coming apart from within?" The fear of the homogenizing in-

fluence of globalization was less crucial than the spectre of poverty still haunting the global, he said.

Javed Faridzadeh, President of the International Centre for Dialogue among Civilizations, said that beyond simple dialogue and mutual interest there was "a higher level of discussion, through which mutual empathy and compassion may be achieved." Singapore's Permanent Representative to the UN, Kisohre Mahbubani, said the result of bringing countries closer in a shrinking globe was a "great unknown," which could produce either harmony or conflict.

Iran's Permanent Representative to the UN, Hadi Nejad Hosseini, in his opening remarks said that the traditional pursuit of national interests by governments could not be further from the intention of a dialogue among civilizations. The dialogue would enhance mutual understanding and develop a new approach to influencing policies.

In proclaiming the Year, the General Assembly in 1998 invited governments and international and non-governmental organizations to develop cultural, educational and social programmes to promote the concept of dialogue among civilizations, including through conferences, seminars and dissemination of information.



## INDIAN NATIONAL SCIENTIFIC DOCUMENTATION CENTRE NEW DELHI

### SHORT-TERM TRAINING COURSES (JAN-MAR, 2000)

Indian National Scientific Documentation Centre (INSDOC) is a premier institution in information science, technology, services and systems in India. Training is a major activity of the institute supported by experienced faculty and modern technology. INSDOC conducts short term courses, Attachment Training Programmes, and Associateship in Information Science (AIS). The short term courses vary from 1 week to 5 weeks duration. Attachment training programme varies from 2 weeks to 6 months depending on the need of the candidate. The AIS is a master level programme in the field and is of 2 years duration. For the period January to March 2000, the following short term courses are being conducted:

#### 1. COMPUTER APPLICATIONS TO LIBRARY & INFORMATION ACTIVITIES

1st Batch : January 03 - February 04, 2000

2nd Batch : February 28 - March 31, 2000

Course contents: Introduction to Computers and IT applications to Library and Information activities; Hardware & Software basics; Operating System concepts; MS-DOS; WINDOWS; MS WORD; CDS/ISIS; Fox pro; DTP; Library Automation; Internet and on-line information retrieval; etc.

**DURATION : 5 Weeks**

#### 2. LIBRARY AUTOMATION

February 14 - February 18, 2000

Course Contents : Application of Information Technology in Libraries, Library automation software, Bar-coding technology, CD-ROM technology, Electronic library, Virtual library, etc.

**DURATION : 1 Week**

#### 3. INTERNET ACCESS AND ON-LINE INFORMATION RETRIEVAL

March 20 - March 24, 2000

COURSE CONTENTS : Internet :Introduction, Services, Tools, WWW, Web Page design, Searching-General principles, Database structure, Process of on-line searching, Search Strategy, International on-line databases, CD-ROM Databases, etc.

**DURATION : 1 Week**

**NO. OF SEATS IN EACH COURSE: 20**

#### COURSE FEE\* :

Duration	Course Fee without Accommodation	Course Fee with Accommodation
5 Weeks	Rs. 6300/-	Rs. 9700/-
1 Week	Rs. 1700/-	Rs. 2300/-

\* Foreign participants may get course fee on request.

Full payment may be made in advance by Demand Draft drawn in favour of Director, INSDOC payable at New Delhi

#### CONTACT PERSONS

Shri V.K. Gupta, Asoc. Head, ETTG.

Tel: 6863521

Shri A. Subba Rao, Asstt. Head, Training Division.

Tel: 6965094, 6863609

Mrs. Rakha Mittal, Scientist, Training Division

Tel: 6965094

INSDOC, 14 SATSANG VIHAR MARG, NEW DELHI - 110 067

Fax 6862228 E-mail Address: [etdg@airnetd.ernet.in](mailto:etdg@airnetd.ernet.in), [etdgtrg@ndf.vsnl.net.in](mailto:etdgtrg@ndf.vsnl.net.in)

---

## BOOK REVIEW

---

### Optimization as a Decision Making Tool in Civil and Aeronautical Engineering

Bhawani Singh\*

---

N.G.R. Iyengar and S.K. Gupta. *Structural Design Optimization*. New Delhi, Affiliated East West Press, 1997. Pp. 229. Rs. 175/-.

---

Structural design is essentially a decision making process in which the designer, i.e. the engineer, has to choose a structural configuration from a large number of possible shapes and sizes. The fundamental attempt is to make the structure faithfully serve its intended purpose, be it a building, a water tank or an aircraft. In the case of small buildings, a consideration of static loading alone is sufficient. The tall structures, however, require considerations of dynamic loading such as wind and earthquake and dynamic behaviour described by mode shapes and eigenvalues. In the aircraft structures where the weight/stiffness ratio must be kept as small as possible, the fiber-reinforced composites have to be taken as the construction material. It is also expected that the magnitude of the loading and the material strength properties will not be known precisely and that there shall be some random variation.

The present book offers the optimization criterion as a basis on which the design decisions may be made. In the case of buildings it might be just the

minimum total cost of material and shuttering. The restriction on deflection, cracking, minimum member sizes and reinforcement ratios appear as constraints. Such design problems are posed as an exercise in nonlinear programming and may be systematically solved through well-established procedures.

This book describes the basic optimization techniques in Part II (Chapters 2 - 5). The techniques of linear, nonlinear, geometric and dynamic programming are covered. Out of these, only the Sequential Unconstrained Minimization Technique (SUMT) seems to have been used in the Part III (Chapters 6 - 23) of this book, which constitutes the application segment. A huge variety of structural problems subjected to a number of loading encountered in Civil and Aeronautical Engineering are considered. The presentation in each chapter is divided into Introduction, Objective Function, Constraints, Results and Discussion. This uniformity makes the presentation concise as well as systematic. The references are provided at the end of each chapter.

The Chapter 12 from Prof. N.C. Nigam is the largest of all

23 chapters. This chapter 12 elaborates on the incorporation of random variables in the optimization and hence in the decision making process. This is a highly sophisticated and specialized field of research on which several books may be written. But the writer has successfully condensed vast amount of information in a limited space and this speaks for the art and magic of the writer.

This book is a welcome addition in that it is a book by Indian authors and is reasonably priced so that Indian students can afford to buy it. Further, it brings a vast amount of information on very advanced topics of research in a very concise form.

This book, however, is not self-contained. It uses the Finite Element Method (FEM) as a tool of analysis in Chapters 10 and 11, but the method could not have been described in this book. Similarly, all equations representing objective functions and constraints are not derived and relevant references are cited from where more information about them may be obtained. Therefore, a thorough knowledge of techniques like FEM, Galerkin method and Ritz method becomes a pre-requisite. In this regard, this book is more suitable for postgraduate students and practising engineers. Although, all the algorithms used in this book are well supported by extensive flow charts, the authors may find it profitable to include some computer programs either in the book or on an accompanying floppy disk. □

---

\*Professor of Civil Engineering,  
University of Roorkee,  
Roorkee-247 667 India.

*With Compliments from :*

## **CREATIVE BOOKS & PERIODICALS PVT. LTD.**

HALIMA BUILDING, 7, NANABHAI LANE,  
MUMBAI-400 001

TEL. : 022-204 3342

022-204 7895

FAX : 022-283 3328

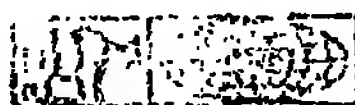
E-MAIL : creat@bom5.vsnl.net.in

## **INTERNATIONAL SUBSCRIPTION AGENTS**

Specialised in :

SCIENTIFIC, TECHNICAL, MEDICAL AND  
ALLIED JOURNALS/MAGAZINES

*With Best Compliments from :*



## **RHINO INTERNATIONAL AGENCIES**

74, Mahavir Centre (4th Floor), Sector 17,  
Vashi, Navi Mumbai-400 703

E-MAIL : rhinosub@bom2.vsnl.net.in

Gram : RHINOS

Fax : 91-022-7892568

Phones : 7892627

: 7908214

### *Leading*

Subscription Agents

Approved by the Good Offices Committee

For Supply of

Foreign & Indian : Scientific & Technical  
Magazines & Books

Rendering Services to

Universities, Medical & Engineering Colleges,

R&D Libraries & All Readers

for the past 28 years



# THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities (October-November 1999)

## HUMANITIES

### Fine Arts

#### Music

1. Dogra, Binu. Sangit Ratnakar mein varnit alankaron ka vivechan evam vartman sangit mein unki saundryatmak upadeyata. (Dr Pankaj Mala), Department of Music, Panjab University, Chandigarh.

2. Gautam, Anita. Beesvin shatabadi mein vaigyanik upakarnon ke karan sangit ke prayog mein huye parivartanon ka akalana. (Dr V Prem Kumari), Department of Music, Dayalbagh Educational Institute, Agra.

3. Gupta, Neetu. 1901 se vartman samay tak Uttar Bhartiya shastriya sangit ke vikas evam parivartanon ka sarvekshan evam vishleshan : Visheshkar gayan ke sandarbh mein. (Dr V Prem Kumari), Department of Music, Dayalbagh Educational Institute, Agra.

4. Pritam Pyari. Ragon ke samaya siddhant ka manovaigyanik vishleshan : Sandhiprakash ragon ke vishesh sandarbh mein. (Dr R K Bhatnagar), Department of Music, Dayalbagh Educational Institute, Agra.

5. Satsangi, Subhadra Kumari. A comparative study of the principal structures in Indian and Western classical music with special reference to rhythm and forms. (Dr V Prem Kumari), Department of Music, Dayalbagh Educational Institute, Agra.

6. Srivastava, Anjali. Kalakaron ke safalata ke prishthbhumi, unki shiksha evam abhyas, gayan ke sandarbh mein. (Dr R K Bhatnagar), Department of Music, Dayalbagh Educational Institute, Agra.

#### Geography

1. Lalzagou. Khuga River Basin : A geographical investigation for its integrated development. (Prof R P Singh), Department of Geography, Manipur University, Imphal.

#### History

1. Samarendra, Padmanabh. The backward caste movements in Bihar, the early twentieth century. (Dr Neeladri Bhattacharya), Centre for Historical Studies, Jawaharlal Nehru University, New Delhi.

2. Sebastian, K O. The Tangsas of Arunachal Pradesh and the socio economic changes since 1947. (Prof S Dutta), Department of History, Arunachal University, Itanagar.

#### Language & Literature

##### English

1. Al-Mekhlafi, Mohd Abdo Ahmed Saleh. Question formation in the English of Yemeni learners of EFL : A case study of the trainee-teachers in the faculty of Education in Sana'a. (Prof S V Parasher and Prof G Rajagopal), Department of English, Central Institute of English and Foreign Languages, Hyderabad.

2. Kapoor, Beena. A study of the narrative style of R K Narayan's novels. (Dr M P Joshi), Department of English, Barkatullah Vishwavidyalaya, Bhopal.

3. Venkata Laxmi Ramana, V S. The poetry of Sarojini Naidu : A study in themes and techniques. (Dr G Damodar), Department of English, Kakatiya University, Warangal.

##### Hindi

1. Kaushik, Meeta. Prabhakar Machve ke upanyason mein prayogsheelta. (Dr Neerja Sood), Department of Hindi, Panjab University, Chandigarh.

2. Mahanande, Pramila Balaji. Bisham Sahni ke sahitya ka shaili vaigyanik adhyayan. (Dr Ramprakash Saxena), Department of Hindi, Nagpur University, Nagpur.

3. Pandey, Ram Garib. Adhunik Bagheli prabandh kavyon

kee parampara mein Prem Ramayan ka vishleshanatmak adhyayan. (Dr Sankata Prasad Mishra), Department of Hindi, Awadhesh Pratap Singh University, Rewa.

4. Sharma, Bhagwat Sharan. Tanwarpari boli ka roopgramik adhyayan. (Dr Bhagwan Sahai Sharma), Department of Hindi, Jiwaji University, Gwalior.

5. Shrivastava, Archana. Upendra Nath Ashk: Vyakti evam upanyaskar, ek anusheelan. (Dr Lahri Singh), Department of Hindi, Awadhesh Pratap Singh University, Rewa.

6. Sikarwar, Anand Singh. Upnyas sahitya ke sandarbh mein Jainendra Kumar ka nari chintan. (Dr Annapurna Bhadoria), Department of Hindi, Jiwaji University, Gwalior.

7. Singh, Namita. Nari manovigyan ke sandarbh mein Rajender Yadav aur Mannu Bhandari ke upnyas. (Dr Jagmohan Chopra), Department of Hindi, Panjab University, Chandigarh.

8. Surina Kumari. Dharmveer Bharti aur Shri Naresh Mehta ke kavyagat bimb-vidhan aur pratik yojna ke tulana. (Dr Santosh Sharma), Department of Hindi, Panjab University, Chandigarh.

##### Kannada

1. Narayanaswamy, K Y. Neeru : Ondu samskrutika adhyayana. (Dr M M Kalburgi), Department of Kannada, Karnatak University, Dharwad.

##### Marathi

1. Kale, Akshya Kumar Malharrao. Arvacheen Marathi kavya darshan. D Litt. Department of Marathi, Nagpur University, Nagpur.

##### Persian

1. Haque, Md Mazharul. India as reflected in modern Persian prose literature. (Dr S A Hasan), Centre for Persian and Central Asian Studies, Jawaharlal Nehru University, New Delhi.

##### Punjabi

1. Gunwant Kaur. Surjit Pattar dee kavita: Ik manovigyanak adhyayan. (Dr Deepak Manmohan Singh), Department of Punjabi, Panjab University, Chandigarh.

##### Sanskrit

1. Dubey, Ramswaroop. Sanskrit natakon mein varnit gramya sanskriti ka swarup. (Dr H R Raidas), Department of Sanskrit, Barkatullah Vishwavidyalaya, Bhopal.

2. Kulshrestha, Madhu. Aryasaptashati ka loktatvik adhyayan. (Dr Meera Sharma), Department of Sanskrit, Dayalbagh Educational Institute, Agra.

##### Telugu

1. Brahmananda Rao, M. 19th century story literature in prose : A critical study. (Prof K Suprasanna Charya), Department of Telugu, Kakatiya University, Warangal.

##### Urdu

1. Behl, Renu. Ismat Chughtai ke afsanon ka fanni wa fikri jaiza. (Dr M Shakeel Khan), Department of Urdu, Panjab University, Chandigarh.

2. Siddiqui, Muneer Husain. Mohammad Husain Mehvi Siddiqui : Hayat aur Urdu zaban o adab ke khidmat. (Dr Mohd Noman Khan), Department of Urdu, Barkatullah Vishwavidyalaya, Bhopal.

##### Philosophy

1. Betal, Chintanharan. Effect of the preksha meditation on drug abuser's personality. (Dr B P Gaur), Department of Philosophy, Jain Vishva Bharati Institute, Ladnun.

2. Mandal, Satyaban. Critical study of Aurobindo's life divine. (Dr K P Pande), Department of Philosophy, Nagpur University, Nagpur.

# Calendar of Events

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be contacted
Jan. 3-13 2000	Developing Multimedia Courseware for Distance Education	To introduce multimedia technology & its applications in training and education	Commonwealth Educational Media Centre for Asia New Delhi and University Computer Centre, Osmania University, Hyderabad	Mr. K. Narayanan Head, Admn. & Finance, Commonwealth Educational Media Centre for Asia (CEMCA) 52, Tuglakabad Institutional Area, New Delhi-110 062
Jan. 27-29 2000	National Seminar on Developmental Communication — Issues & Challenges	Helping those engaged in development work to plan effective communication strategies	Deptt. of Home Science Extension & Communication, MS University of Baroda	Dr. Uma Joshi Deptt. of Home Science Extension & Communication Faculty of Home Science, MS University, Baroda Vadodara-390 002
Feb. 22-24 2000	International Conference on Higher Education for Human Development	To exchange views on issues likely to impact human development in the next century	Association of Indian Universities, New Delhi	Dr. Veena Bhalla Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi-110 002

*With Best Compliments from :*

**VEENA BOOK CENTRE**  
IMPORTERS, BOOK SELLERS &  
SUBSCRIPTION AGENTS

426, 2ND FLOOR  
ALANKAR PEARL PLAZA  
KEMPEGOWDA ROAD  
BANGALORE-560 009

Phone : 2265077 (Office)  
Phone : 2876706, 2261132 (Showroom)  
Fax : 2261132  
E-Mail : vbc@bgl.vsnl.net.in  
TIMINGS : 9.30 AM to 8.00 PM

*With Best Compliments from :*

**THE STANDARD BOOK COMPANY**  
LEADING LIBRARY SUPPLIERS  
SINCE 1935

4/18, MORZARIA INDUSTRIAL ESTATE,  
BANNERGHATTA ROAD,  
BANGALORE-560 029

PHONES : 5535522, 5535544, 5535588  
FAX : 91-80-5536323  
E-Mail : standard@vsnl.com

# COMMUNICATION

## Highly Inspirational

One of the best speeches that I have ever read in *University News*, (25 Oct. 1999) is that of the 37th convocation address of Indian Institute of Technology, Bombay, delivered by Mr Azim H Premji, Chairman and Managing Director of Wipro Ltd.

Mr Premji has enumerated six lessons of success with conviction and illustration: (i) hard work, (2) purposeful work, (3) pivotal role of people in organizations, (4) raising one's standards continuously, (5) importance of continuous learning, and (6) creating opportunities for oneself. These lessons are not meant for technologists alone. Everyone who wants to live a proper and meaningful life can greatly profit by these lessons.

As a student of education, I find Mr Premji's lessons of success equally relevant to the teaching profession. A teacher needs to work hard and work with the purpose of shaping the destiny of the country in the classrooms. As a resource in an educational organization, the teacher requires to understand his own significant role and that of others — colleagues, students, and the supporting staff. Every teacher has to raise his or her standard of teaching continuously. This cannot be done without continuous learning. It is also necessary for the teacher to create the opportunities of learning and teaching for himself or herself. Conducive atmosphere of teaching-learning will not drop from heaven. It has to be created by every teacher, even amidst opposition from colleagues and students. There is no point in blaming the system.

I felt like requesting Mr Premji to elaborate his six beliefs, four Wipro values and the six sigma approach to Quality. Perhaps he may have another convocation address for that!

Thank you for bringing the address of Mr Premji to the atten-

tion of your readers. It is an inspiration manual that can be read again and again.

Dr P. Dhanavel  
Senior Lecturer,  
Department of English,  
Tripura University,  
Agartala-799 004



## UNIVERSITY OF KERALA

THIRUVANANTHAPURAM 695 034

No.PR1/1660/37/99

### NOTIFICATION

Applications are invited for appointment to the following posts.

Sl. No.	Department	Post	Scale of Pay Rs.	Vacancy	Quota*
1	Demography	Graduate Field Assistant	4500-7000 (Revised)	Two	1.Female-SC 1.Male-Open
2	Chemistry	Glass Blower	5250-8150 (Revised)	One	Open
3	Physical Education	Coach- Hockey -do- Football- (Women)	6500-10550 (Revised)	One One	Open Open
4	Computer Science	Professor	4500-7300	One	Open
5	Environmental Science	Reader	3700-5700	One	Ezhava
6	-- do --	Lecturer	2200-4000	Three	2-Open 1-Ezhava
7	Bio-Technology	- do -	- do -	One	Open
8	Computer Science	- do -	-- do --	One	Muslim
9	Opto-Electronics	- do -	- - do -	One	Open
10	Institute of Management in Kerala	- do -	-- do --	One	Ezhava

\* In the case of reserved posts, if no candidate from the said communities are found suitable, applications from other reserved communities will be considered in accordance with the communal rotation and in the absence of such suitable candidates, members of forward communities will also be considered

**Age (as on 1.1.99):** Post(1): Not more than 35 years. Relaxable by 5 years in case of persons who have served in projects/schemes in University. Post(2)&(3): Not less than 18 years and not more than 35 years. Post(4): Not more than 50 years. Post(5): Not more than 45 years. Post(6) to (10): Not more than 40 years.

(Usual relaxations in upper age limit for SC/ST/OBC. Relaxation in upper age limit for those in teaching service of the University for post (4) to (10). Relaxation in upper age limit for qualified teachers of affiliated colleges and UGC qualified technical staff (non-teaching) of the University service who are above 40 years for posts (5) to (9))

**Qualifications:** Post (1): Essential:- B A/B.Sc with at least II class. Desirable:- Field work experience in social surveys. Post(2): General:- S.S.L.C. Technical:- 2 years' training in Govt. recognised institutions and 3 years' experience in fabricating scientific glass apparatus. Post(3): (i) Graduate certificate obtained from National Institute of Sports, Patiala or Diploma in Physical Education. (ii) Experience in coaching, record of outstanding performance. Post(4) to (10): As per U.G.C. norms; approved by the University of Kerala.

**Cost of Application forms:** For Post(1),(2)&(3): Rs.20/- Post(4): Rs. 350/-

Post(5): Rs. 300/- & Post(6) to (10): Rs. 150/-

**Mode of Remittance:** By D.D. drawn on SBT/SBI/Dist.Co-OP.Bank (Candidates residing outside the State may send DD drawn on any Nationalised Bank), in favour of the Finance Officer, University of Kerala, payable at Thiruvananthapuram or by pay-in-slip at the University cash counter. (Applicants who send DD should note on its reverse, their name and purpose of remittance).

**Application Forms and more details** can be had, on request from the Section Officer, Forms Section, University of Kerala, Thiruvananthapuram 695 034, specifying post and enclosing DD/Pay-in-slip, towards cost of application. If required by post, enclose a self-addressed, stamped (Rs.3/-) envelope (28 cm x 13 cm).

**Last Date for receipt of filled in applications:** 10th January, 2000.

22 November, 1999

Dr.G.Sidhardhan  
Registrar

**NB:-** Those who have already applied in response to earlier notification Nos. PR1/2751/16/93 dtd. 2.12.93 (Professor, Computer Science), PR1/3872/12/91 dtd. 6.4.91 & PR1/2151/24/97 dtd. 5.9.97 (Lecturer, Management) are exempted from applying again, provided they possess the required present qualification at the time of earlier submission of their applications. Additional qualifications/experience subsequently acquired, may be informed with supporting documents.

## Computers in Lib. Sc. Courses

Mr VKJ Jeevan's observation in his article "Teaching Computers to Library Science Students" (*University News*, Aug 2, '99) "But the introduction of computers has not gone further than teaching few theoretical topics on Information Technology" is baseless and misleading. Well established LIS Deptts. of Universities including Andhra University give hands-on exposure to computers to their students, thus going much beyond theoretical inputs.

As the course director of two UGC sponsored programmes in the recent past — "Computer Applications to LIS (two weeks)" and "Refresher course in LIS" (4-weeks) at Andhra University, I acknowledge the significant support being rendered by UGC to Universities' teaching departments of LIS, in teaching IT to Librarians/LIS teachers.

Jeevan was however right in saying that the specialised P.G. courses like "Library Automation and Networking" "Information Technology" etc can be merged with the existing courses — BLisc/MLisc., MCA may also be prescribed as a main qualification besides B.Tech/M.Tech in Computer Science, though it is a moot point as to how many candidates with these qualifications will be attracted to teach LIS Students!

**Dr. C. Sasikala**  
Assoc. Professor,  
Dept. of Library &  
Information Science,  
Andhra University,  
Visakhapatnam-530 003



**TATA INSTITUTE OF SOCIAL SCIENCES**

A Deemed University

P.O. Box No. 8313, Deonar, Mumbai - 400068

### ANNOUNCES ADMISSION TO THE FOLLOWING ACADEMIC PROGRAMMES - 2000-2002

**1. M.A. IN SOCIAL WORK** with specialisations in (i) Criminology and Correctional Administration, (ii) Family and Child Welfare, (iii) Medical and Psychiatric Social Work, (iv) Social Welfare Administration, and (v) Urban and Rural Community Development.

**Eligibility:** A First Bachelor's Degree of minimum three years duration in (i) Arts / Commerce / Science / Engineering with a minimum aggregate marks of 45% (35% for SC/ST); (ii) Law / Medicine / Nursing with a minimum aggregate marks of 50% (40% for SC/ST), or the equivalent grade. *Cost of application form Rs.250/-.*

**2. M.A. IN PERSONNEL MANAGEMENT AND INDUSTRIAL RELATIONS**

**Eligibility:** A First Bachelor's Degree of minimum three years duration in (i) Arts / Commerce / Medicine / Law / Nursing with a minimum aggregate marks of 50% (40% for SC/ST) or the equivalent grade; (ii) Science / Engineering with a minimum aggregate marks of 55% (45% for SC/ST). *Cost of application form Rs.250/-.*

**3. MASTER OF HEALTH ADMINISTRATION & 4. MASTER OF HOSPITAL ADMINISTRATION**

**Eligibility:** A First Bachelor's degree of minimum three years duration in any discipline with a minimum aggregate marks of 50% (40% for SC/ST). Age under 45 years, relaxable only under special circumstances. Preference will be given to persons holding administrative position in health sector. Medical graduates should have completed internship before 15.6.2000. *Cost Rs. 250/- per form.*

**5. CERTIFICATE IN SOCIAL WELFARE ADMINISTRATION** (June 26, 2000 to October 25, 2000).

**Eligibility:** A Bachelor's Degree in any discipline with a minimum of three years experience in the field of social welfare/development programmes. *Cost of application form Rs. 20/-*

**Note:** (A) For programme nos. 1 to 4 only: The applicant must have a first Bachelor's Degree under any pattern fulfilling the mandatory requirement of 15 years of formal education including a minimum three years duration of a Bachelor's degree to become eligible for admission to any master's degree programmes of the Institute.

(B) For programme nos. 1 and 2 only: Applicants who will complete their final year Bachelor's degree examination by June 15, 2000, will also be eligible to apply provided they have obtained the minimum percentage of marks specified under Eligibility, in their first and second year examinations together. If the Degree course is of 3 year duration and the first, second and third year examinations together if the Degree course is of 4 year duration.

**APPLICATION FORM AND INFORMATION BROCHURE** are available with Section Officer (Cash) of the Institute on cash payment (Monday to Friday 10.30 a.m. to 1.00 p.m. and 1.30 p.m. to 2.00 p.m. and Saturday 10.30 a.m. to 1.00 p.m.) OR may be obtained from Assistant Registrar (Academic) specifying the title of the programme for which admission is sought by enclosing (i) a Bank draft towards the cost of application form (non-refundable) drawn in favour of the TATA INSTITUTE OF SOCIAL SCIENCES, Mumbai (ii) self-addressed envelope (20 c.m. x 25 c.m.) with postal stamps worth Rs.30/-

**Reservation for SC/ST:** 15% and 7 1/2% of seats reserved in all the programmes for SC/ST candidates respectively.

**Free application forms** will be provided to those SC/ST candidates who are unemployed and whose parent's/guardian's income is Rs. 50,920/- or below in the financial year 1998-99. Such SC/ST candidates need to submit a true copy of Caste/Tribe Certificate and the Income Certificate (Monthly or Yearly) of their parents/guardians issued by a Village Revenue Officer, Tahsildar or the employer alongwith a self addressed envelope (20 c.m. x 25 c.m.) with postal stamps worth Rs.30/-

**Last dates for receipt of completed applications** at the Institute by hand or by post: (i) 29.2.2000 for M.A. in Social Work, (ii) 28.1.2000 for M.A. in P.M. & I.R. (iii) 31.3.2000 for Health and Hospital Administration and (iv) 19.5.2000 for Certificate in SWA.

**Foreign Nationals:** 5% seats are reserved for programme nos. 1 to 4.

**Hostel:** Limited seats for men and women for programme nos. 1 to 4.

**Scholarships:** Some on Need-cum-merit/Merit-cum-need basis available.

The tests and interviews will be held in June 2000 at the Institute only. For further details write to the Assistant Registrar (Academic) or contact on Tel: 556 3289 to 96. Ext. 261. Fax: 22-556 2912.

**NEW ACADEMIC SESSION COMMENCES ON JUNE 26, 2000.**

Mumbai, 5.12.1999

**Dr. S.K. Bandyopadhyay,**  
REGISTRAR



# AGRICULTURAL SCIENTISTS RECRUITMENT BOARD

KRISHI ANUSANDHAN BHAVAN, PUSA, NEW DELHI-110 012

Advt. No. 7/89

Applications are invited for the following Scientific and Technical posts under the different Institutes and Headquarters of the Indian Council of Agricultural Research, New Delhi.

## DIRECTOR OF NATIONAL INSTITUTE

Pay Scale : Rs. 29000 (Fixed)

### CENTRAL INSTITUTE OF FISHERIES EDUCATION, MUMBAI

274. Director (One Post)

**Qualifications Essential :** i) Doctoral degree in Fish and Fishery Science/ Zoology/ Marine Biology/ Fisheries Technology or related discipline. ii) An eminent scientist/ teacher having at least 8 years experience in the grade of Principal Scientist (Rs. 16400-22400) or in an equivalent position out of which 3 years experience should be in a Research Management Position or in an equivalent position. OR An eminent Scientist having proven record of scientific contribution working in a reputed organisation/ institute having 21 years of experience in the relevant subject out of which 3 years experience should be in a Research Management Position or in an equivalent position. iii) Evidence of contribution to research/ teaching/ extension education/ management as supported by published work/ innovations. iv) Specialisation and experience in Fisheries Research/ Education.

### DIRECTORS OF INSTITUTE

Pay Scale : Rs. 16400-450-20900-500-22400 (Minimum pay to be fixed at 17300 on initial appointment)

### INDIAN GRASSLAND AND FODDER RESEARCH INSTITUTE, JHANSI

275. Director (One Post)

**Qualifications Essential :** i) Doctorate degree in any branch of Agricultural Sciences. ii) At least 5 years experience as a Principal Scientist (Rs. 16400-22400) or in an equivalent position. OR An eminent Scientist having proven record to scientific contribution working in a reputed organisation/ institute having at least 18 years experience in the relevant subject. iii) Evidence of contribution to Research/ Teaching/ Extension Education as supported by published work/ innovations. iv) Specialisation and experience in the field of forage crops improvement/ grassland management. *Desirable :* Experience in a Research Management Position.

### CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY, COCHIN

276. Director (One Post)

**Qualifications Essential :** i) Doctoral degree in Fisheries Technology/ Fish and Fishery Science/ Microbiology/ Mechanical Engineering/ Biochemistry or related subject. ii) & iii) As in Item No. 275(ii) & 275(iii) above. iv) Specialisation & Research experience in harvest and Post-harvest technology of fish/ship design/Marine Engines and Scientific population in the field of fishing/fish processing technology. *Desirable :* Experience in a Research Management Position.

### JOINT DIRECTOR OF NATIONAL INSTITUTE

Pay Scale : Rs. 16400-22400

### INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR

277. Joint Director-cum-Officer incharge, IVRI Bangalore under IVRI, Izatnagar (One Post)

**Qualifications Essential :** i) Doctoral degree in the field of Veterinary Bacteriology & Virology. ii) & iii) As in Item No. 275(ii) & 275(iii) above. iv) Specialisation in Virology Vaccine Development. *Desirable :* Experience in a Research Management Position.

### JOINT DIRECTOR & HEAD OF DIVISION

Pay Scale : Rs. 16400-22400

### CENTRAL POTATO RESEARCH INSTITUTE, SHIMLA

278. Joint Director, Central Potato Research Station, Modipuram under CPRI, Shimla (One Post)

**Qualifications Essential :** i) Doctoral degree in any branch of Horticulture science or other allied disciplines. ii) Principal Scientist in the scale of Rs. 16400-22400 or in an equivalent position. OR 8 years experience as a Senior Scientist (Rs. 12000-18300) or in an equivalent position. OR An eminent Scientist having proven record of scientific contribution working in a reputed organisation/ institute having at least 13 years experience in the relevant subject. iii) As in Item No. 275(iii) above. iv) Specialisation in the field of Potato/ Tuber Crops/ Vegetable Research

279. Head, Division of Plant Pathology (One Post)

**Qualifications Essential :** i) Doctoral degree in Plant Pathology/ Plant Virology. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation in Plant Pathology preferably in Potato tuber crops or Vegetable Crops.

### INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR

280. Head, Division of Standardization (One Post)

**Qualifications Essential :** i) Doctoral degree in Veterinary Bacteriology and/or Virology. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in Veterinary Standardization.

281. Head, Division of Animal Genetics (One Post)

**Qualifications Essential :** i) Doctoral degree in Animal Genetics & Breeding. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of livestock Genetics and Breeding.

282. Head, Division of Pathology (One Post)

**Qualifications Essential :** i) Doctoral degree in Veterinary Pathology. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of Veterinary Pathology.

### INDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI

283. Head, Division of Genetics (One Post)

**Qualifications Essential :** i) Doctoral degree in Genetics and/or Plant Breeding/Botany with research in genetics and crop improvement. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of Genetics and Plant Breeding.

284. Head, Division of Agricultural Physics (One Post)

**Qualifications Essential :** i) Doctoral degree in Physics, Soil Physics, Environment Physics or Bio-Physics, Agril. Physics & Meteorology. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in any branch of Agricultural Physics.

285. Head, Division of Floriculture & Landscaping (One Post)

**Qualifications Essential :** i) Doctoral degree in Horticulture/ Plant Breeding/ Genetics. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of Floriculture and Landscaping.

286. Head, Division of Soil Science & Agricultural Chemistry (One Post)

**Qualifications Essential :** i) Doctoral degree in Soil Science and/or Agril. Chemistry or Chemistry with thesis work in Soil Science or Agril. Chemistry or Doctoral degree in Soil Science or any cognate branch of Soil Science as recognised under ARS. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in Pedology/ Soil Fertility/ Soil Chemistry/ Soil Biology.

287. Head, Division of Extension (One Post)

**Qualifications Essential :** i) Doctoral degree in Agril. Extension or related discipline. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in Agricultural Extension.

288. Head, Division of Plant Pathology (One Post)

**Qualifications Essential :** i) Doctoral degree in Mycology/ Plant Pathology/ Botany/ Agricultural Botany. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in any branch of Plant Pathology.

289. Head, Division of Agricultural Chemicals (One Post)

**Qualifications Essential :** i) Doctoral degree in Organic Chemistry/ Analytical Chemistry/Agril. Chemistry/ Agril. Chemicals. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in Organic Chemistry/Agril. Chemistry/ Analytical Chemistry/Agril. Chemical.

290. Head, IARI Regional Station, Wellington under IARI, New Delhi (One Post)

**Qualifications Essential :** i) Doctoral degree in Plant Breeding or Plant Genetics or Agril. Botany with specialisation in Plant Breeding. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience on Wheat improvement, shuttle breeding or breeding for disease resistance, particularly rust resistance.

### CENTRAL INSTITUTE OF FISHERIES TECHNOLOGY, COCHIN

291. Head, Division of Fishing Technology (One Post)

**Qualifications Essential :** i) Doctoral degree in Fish and Fishery Sciences/ Zoology with specialisation in Fisheries Sciences/ Naval Architecture/ Industrial Fisheries related to Harvest Technology/ Marine Sciences. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience of research in Fishing operations, Fishing Craft Technology, Fishing Gear Technology, Fishing Material Management.

292. Head, Division of Engineering (One Post)

**Qualifications Essential :** i) Doctoral degree in any branch of Engineering (Chemical/ Mechanical/ Electrical) Instrumentation Technology/Naval Architecture/Aquaculture Engineering. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience of high quality research/ teaching/ extension/ industrial liaison in any branch of engineering related to fishery technology.

### CENTRAL SHEEP AND WOOL RESEARCH INSTITUTE, AYKANAGAR

293. Head, Division of Animal Physiology (One Post)

**Qualifications Essential :** i) Doctoral degree in Animal Physiology/ Animal Reproduction. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of Animal Physiology/ Animal Reproduction.

294. Head, CSWRI Arid Region Campus, Bikaner (One Post)

**Qualifications Essential :** i) Doctoral degree in Livestock Production, Animal Genetics and Breeding/ Animal Nutrition/ Animal Physiology/ Livestock Production and Management. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of Livestock Production, Animal Genetics and Breeding/ Animal Nutrition/ Animal Physiology/ Livestock Production and Management.

### CENTRAL RICE RESEARCH INSTITUTE, CUTTACK

295. Officer-in-Charge, Regional Rainfed Lowland Rice Research Station, Cerva under CRRRI, Cuttack (One Post)

**Qualifications Essential :** i) Doctoral degree in any branch of Crop Sciences. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and research experience in the field of Crop Improvement/ Production/ Protection of Rice.

296. Head, Division of Biochemistry, Plant Physiology & Environmental Sciences (One Post)

**Qualifications Essential :** i) Doctoral degree in Biochemistry/ Plant Biochemistry/ Plant Physiology. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of Biochemistry/ Plant Physiology relevant to food crops.

297. Head, Division of Crop Improvement (One Post)

**Qualifications Essential :** i) Doctoral degree in Plant Breeding/ Genetics/ Botany/ Agricultural Botany/ Economic Botany. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of Rice Breeding and Genetics.

### CENTRAL INSTITUTE OF POST HARVEST ENGINEERING AND TECHNOLOGY, LUDHIANA

298. Head, Division of Transfer of Technology (One Post)

**Qualifications Essential :** i) Doctoral degree in Agricultural Engineering. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Specialisation and experience in the field of Agril. Structures and Process Engineering specifically in the prototype production and technology promotion.

### INDIAN INSTITUTE OF SOIL SCIENCE, BHOPAL

299. Head, Division of Soil Physics (One Post)

**Qualifications Essential :** i) Doctoral degree in Soil Science/ Agricultural Physics/ Physics with specialisation in Soil Physics. ii) & iii) As in Item No. 278(ii) & 278(iii) above. iv) Experience in the field of Soil Physical Characteristics in relation to Agricultural Production.

300. Head, Division of Soil Biology (One Post)

**Qualifications Essential :** i) Doctoral degree in Soil Science/ Agril. Microbiology/ Microbiology with Doctoral research based on work in Soil Microbiology. ii) & iii) As in

Item No. 278(ii) & 275(iii) above. iv) Experience in the field of Microbial Decomposition of organic waste/ Biofertilizers/ Soil Microbial processes.

**301. Head, Division of Environmental Soil Science (One Post)**

**Qualifications Essential:** i) Doctoral degree in any branch of Soil Science with Doctoral Research based on work in Environmental Soil Science. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Experience in the field of Soil Water Pollutants/emission of gases from agricultural fields.

**INDIAN INSTITUTE OF HORTICULTURAL RESEARCH, BANGALORE**

**302. Head, Division of Soil Science & Agricultural Chemistry (One Post)**

**Qualifications Essential:** i) Doctoral degree in the Soil Science/ Agricultural Chemistry. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Research experience in soil fertility/ fertilizer use/soil chemistry/soil Microbiology with particular reference to horticultural crops as evidenced by published work.

**CENTRAL INSTITUTE OF AGRICULTURAL ENGINEERING, BHOPAL**

**303. Head, Division of Agricultural Mechanization (One Post)**

**Qualifications Essential:** i) Doctoral degree in Agricultural Engineering. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Experience in design and development of improved agricultural machinery for crop production and in research management.

**CENTRAL PLANTATION CROPS RESEARCH INSTITUTE, KASARAGOD**

**304. Head, Regional Station, Mankoy under CPCRI, Kasaragod (One Post)**

**Qualifications Essential:** i) Doctoral degree in any Branch of Agril. Sciences. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Specialisation and experience in Horticulture with special reference to Plantation Crops.

**CENTRAL INSTITUTE FOR RESEARCH ON COTTON TECHNOLOGY MUMBAI**

**305. Head, Division of Transfer of Technology (One Post)**

**Qualifications Essential:** i) Doctoral degree in any branch of Pure or Applied Sciences/ Agricultural Engineering/ Agricultural Extension/ Textile Technology. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Experience in transfer of technology relating to post-harvest processing of cotton including ginning, quality testing, spinning, weaving, knitting, chemical and bio-chemical processing/ finishing and cotton by-products utilisation.

**INDIAN GRASSLAND & FODDER RESEARCH INSTITUTE, JHANSI**

**306. Head, Division of Soil Sciences (One Post)**

**Qualifications Essential:** i) Doctoral degree in Agricultural Extension/ Agricultural Economics. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Specialisation and experience in the field of transfer of technology/ organising training programmes.

**INDIAN INSTITUTE OF SPICES RESEARCH, CALCUTTA**

**307. Head, Division of Crop Production (One Post)**

**Qualifications Essential:** i) Doctoral degree in Horticulture/ Agronomy/ Soil Science/ Biochemistry. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Specialisation and experience in the field of production technology of different spice crops.

**308. Head, Division of Crop Protection (One Post)**

**Qualifications Essential:** i) Doctoral degree in Plant Pathology/ Nematology/ Agricultural Entomology/ related disciplines. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Specialisation and experience in the field of spices research in plant protection.

**CENTRAL SOIL & WATER CONSERVATION RESEARCH & TRAINING INSTITUTE, DEHRADUN**

**309. Head, Division of Hydrology & Engineering (One Post)**

**Qualifications Essential:** i) Doctoral degree in Soil & Water Conservation Engineering, Agril. Engineering, Soil & Water Engineering, Civil & Environmental Engineering (specialisation in Hydrology & Water Resource Engineering). ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Specialisation in any field of Hydrology/Soil and Water Conservation Engineering, Watershed Management.

**NATIONAL BUREAU OF SOIL SURVEY & LAND USE PLANNING, NAGPUR**

**310. Head, Division of Land Use Planning (One Post)**

**Qualifications Essential:** i) Doctoral degree in Soil Science/Agronomy. ii) & iii) As in Item No. 278(ii) & 275(iii) above. iv) Relative specialisation and experience cognate to the job requirement. a) Planning, Organising and executing research in Pedology/ Land Use Planning. b) Teaching experience in Soil Science/ Land Use Planning. c) Relative specialisation and relevant experience cognate to job requirement for land use planning, land evaluation, land resource management.

## PRINCIPAL SCIENTIST

**Pay Scale:** Rs. 16400-22400. **Age:** Below 50 years (There will be no maximum age limit for the ICAR employees. Relaxation to SC/ST candidates may be given in accordance with the orders issued by Govt. of India from time to time).

**CENTRAL INSTITUTE OF BRACKISHWATER AQUACULTURE, CHENNAI**

**311. Principal Scientist (Veterinary Pathology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Fish Pathology/ Veterinary Pathology. ii) 10 (Ten) years experience excluding the period spent in obtaining the Ph.D. degree (subject to maximum of 3 years) in research/ teaching/ extension education provided 3 years experience is as a Senior Scientist (Rs. 12000-18300) or in an equivalent position. iii) As in Item No. 275(iii) above. iv) Specialisation in Pathology, preferably in Fish/Crustacean Pathology.

**INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR**

**312. Principal Scientist (Veterinary Parasitology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Veterinary Parasitology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation: Immuno-Parasitology/ molecular characterization of parasite antigens.

**313. Principal Scientist (Veterinary Pathology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Veterinary Pathology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation: Cyto. Immuno-pathology in Cyto pathology/molecular pathology.

**314. Principal Scientist (Veterinary Surgery) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Veterinary Surgery. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in micro surgery/ endoscopic surgery.

**315. Principal Scientist (Biotechnology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Biotechnology/ Molecular Biology/ Biochemistry/ Microbiology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in the field of Genetic Engineering.

**316. Principal Scientist (Animal Physiology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Veterinary/ Animal Physiology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in Environmental Physiology/

Work Physiology/ Bioenergetics.

**317. Principal Scientist (Veterinary Bacteriology & Virology) at Wageningen Campus of IVRI (One Post)**

**Qualifications Essential:** i) Doctoral degree in Virology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in production, research and quality control of Viral vaccines using cell culture technique, preferably in large scale production.

**318. Principal Scientist (Veterinary Pathology) at HSADL, Bhopal under IVRI, Izatnagar (One Post)**

**Qualifications Essential:** i) Doctoral degree in Veterinary Pathology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in High Security Disease Investigation/ experience in emerging and exotic disease.

**DIRECTORATE OF WHEAT RESEARCH, KARNAL**

**319. Principal Scientist (Plant Breeding) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Plant Breeding/ Genetics. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation and experience in the field of wheat breeding and related areas of research/ teaching programme.

**320. Principal Scientist (Plant Pathology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Plant Pathology/ Mycology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation and experience in the field of wheat diseases and related areas of research/ teaching programme in the relevant field.

**321. Principal Scientist (Quality/ Biochemistry) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Cereal Chemistry/ Chemistry/ Biochemistry/ any branch of Chemistry related to Agriculture. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation and experience in the field of wheat quality product development and related areas of research.

**322. Principal Scientist (Agronomy) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Agronomy/ Soil Fertility. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation and experience in the field of wheat Agronomy, Soil Fertility and input management.

**NATIONAL RESEARCH CENTRE FOR GRAPES, PUNE**

**323. Principal Scientist (Horticulture) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Horticulture. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in the field of fruit crops preferably in Grapes.

**INDIAN COUNCIL OF AGRICULTURAL RESEARCH HEADQUARTERS, NEW DELHI**

**324. Principal Scientist (Computer Application in Agriculture) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Electronics, Engineering (any branch) or Computer Science. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Experience in WAN and LAN Management and Internet Applications.

**INDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI**

**325. Principal Scientist (Microbiology) at National Centre for Conservation and Utilisation of Blue Green Algae, IARI, New Delhi. (One Post)**

**Qualifications Essential:** i) Doctoral degree in Microbiology or in Plant Science with specialisation in Microbiology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation and relevant experience cognate to the job requirement. Teaching/Research experience in survey, isolation, identification culture and maintenance of blue-green algae.

**ICAR RESEARCH COMPLEX FOR NEH REGION, BARAPANI**

**326. Principal Scientist (Animal Reproduction) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Veterinary Physiology/ Animal Physiology/ Animal Reproduction. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation and experience of research in Animal Reproduction.

**327. Principal Scientist (Entomology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Entomology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in integrated Pest Management.

**CENTRAL INSTITUTE OF AGRICULTURAL ENGINEERING, BHOPAL**

**328. Principal Scientist (Agricultural Structures & Process Engineering) (Two Posts)**

**Qualifications Essential:** i) Doctoral degree in Agricultural Engineering. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in process Engineering/ Soyabased food product processing.

**CENTRAL AVIAN RESEARCH INSTITUTE, IZATNAGAR**

**329. Principal Scientist (Animal Genetics & Breeding) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Animal Genetics & Breeding/ Poultry Science with specialisation in Poultry Breeding. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation and experience in the field of Poultry Genetics and Breeding.

**CENTRAL INSTITUTE FOR RESEARCH ON BUFFALOES, HISAR**

**330. Principal Scientist (Animal Physiology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Animal Physiology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in Animal Physiology.

**CENTRAL POTATO RESEARCH INSTITUTE, SHIMLA**

**331. Principal Scientist (Plant Pathology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Plant Pathology and allied disciplines. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in Pathology of Potato or tuber crops with reference to fungal bacterial diseases.

**332. Principal Scientist (Biotechnology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Biotechnology/ Biochemistry/ Genetics/ Plant Breeding/ Botany and allied fields. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in micropropagation cell and tissue culture and genetic transformation in potato/tuber crops.

**DIRECTORATE OF RICE RESEARCH, HYDERABAD**

**333. Principal Scientist (Soil Science) (One Post)**

**Qualifications Essential:** i) Doctoral degree in the field of Soil Science. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in rice nutrition with emphasis on integrated nutrient management in rice based cropping systems.

**CENTRAL SHEEP & WOOL RESEARCH INSTITUTE, AVIKANAGAR**

**334. Principal Scientist (Animal Physiology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Animal Physiology/ Veterinary Physiology/ Animal Reproduction with specialisation in Livestock Physiology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in ruminant physiology/ ruminant production/ reproduction.

**NATIONAL RESEARCH CENTRE ON CAMEL, BIKANER**

**335. Principal Scientist (Animal Physiology) (One Post)**

**Qualifications Essential:** i) Doctoral degree in Animal/Veterinary Science in the area of Animal Physiology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in



Physiology of large ruminant/ Reproductive Physiology/ Adaptation Physiology.

**NATIONAL RESEARCH CENTRE ON MITHUN, NAGALAND**

336. Principal Scientist (Animal Physiology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Animal Physiology. ii) & iii) As in Item No. 311(ii) & 275(iii) above. iv) Specialisation in Animal Physiology.

**SENIOR SCIENTIST**

**Pay Scale:** Rs. 12000-18000. **Age:** Below 45 years (There will be no maximum age limit for the ICAR employees. Relaxation to SC/ST candidates may be given in accordance with the orders issued by Govt. of India from time to time).

**NATIONAL RESEARCH CENTRE FOR ARID HORTICULTURE, BIKANER**

337. Senior Scientist (Computer Application) (One Post)

**Qualifications Essential:** i) Doctoral degree in Computer Application/ Computer Science/ Engineering (any branch)/ Mathematics/ Statistics/ Agricultural Statistics with 5 years experience (excluding the period spent in obtaining the Ph.D. degree during service subject to a maximum of 3 years) in research/ teaching/ extension education as Scientist (Rs. 2200-4000) (pre-revised) or in an equivalent position in the relevant subject. OR Master's degree in Engineering any branch with 8 years experience in research teaching/ extension education as a Scientist (Rs. 2200-4000) (pre-revised) or in an equivalent position in the relevant engineering subject. ii) As in Item No. 275(iii) above. iv) Experience in Application Software and Computer Networking.

338. Senior Scientist (Horticulture) (One Post)

**Qualifications Essential:** i) Doctoral degree in Horticulture. ii) 5 (Five) years experience (excluding the period spent in obtaining the Ph.D. degree during service subject to a maximum of 3 years) in research/ teaching/ extension education as Scientist (Rs. 2200-4000) (pre-revised) or in an equivalent position in the relevant subject. iii) As in Item No. 275(iii) above. iv) Specialisation and experience in the field of Arid Zone Research.

**CENTRAL ARID ZONE RESEARCH INSTITUTE, JODHPUR**

339. Senior Scientist (Horticulture) (One Post)

**Qualifications Essential:** i) Doctoral degree in Horticulture. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation and experience in the field of Arid Zone Research.

340. Senior Scientist (Economic Botany) (One Post)

**Qualifications Essential:** i) Doctoral degree in Botany. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation and experience in the field of Arid Zone Research.

341. Senior Scientist (Plant Physiology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Plant Physiology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation and experience in the field of Arid Zone Research.

342. Senior Scientist (Soil Chemistry/ Fertility/ Microbiology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Soil Science. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation and experience in Soil Fertility, Plant Nutrients Management under Arid System.

343. Senior Scientist (Agronomy) at CAZRI's Regional Station, Jaisalmer (Rajasthan) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agronomy. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation and experience in the field of Arid Zone Farming System Research.

**PROJECT DIRECTORATE OF BIOLOGICAL CONTROL, BANGALORE**

344. Senior Scientist (Agricultural Entomology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agriculture/ Zoology with specialisation in Entomology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in biological control and knowledge of sophisticated equipments for synthesising hormones as supported by published work.

345. Senior Scientist (Plant Pathology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agriculture/ Plant Pathology/ Mycology/ Botany with specialisation in Mycology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in identification and mass culture of fungi and handling of sophisticated equipments as supported by published work.

346. Senior Scientist (Microbiology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agriculture/ Microbiology/ Botany with specialisation in Microbiology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in identification and mass culture of bacteria and handling of fermentors as supported by published work.

347. Senior Scientist (Agricultural Entomology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agriculture/ Zoology with specialisation in Entomology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in mass production of natural enemies as supported by published work.

348. Senior Scientist (Agricultural Entomology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agriculture/ Zoology with specialisation in Entomology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in strain selection and production of natural enemies and their hosts on diets as supported by published work.

**ZONAL COORDINATION UNIT VIII, TOT PROJECTS, NDRI CAMPUS, ADUGODI, BANGALORE**

349. Senior Scientist (Agricultural Extension) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agricultural Extension. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in training and communication.

**ICAR RESEARCH COMPLEX FOR NEH REGION, BARAPATI**

350. Senior Scientist (Computer Application in Agriculture) (One Post)

**Qualifications Essential:** i) Doctoral degree in Computer Application/ Computer Science/ Engineering (any branch)/ Mathematics/ Statistics/ Agricultural Statistics with 5 years experience (excluding the period spent in obtaining the Ph.D. degree during service subject to a maximum of 3 years) in research/ teaching/ extension education as Scientist (Rs. 2200-4000) (pre-revised) or in an equivalent position in the relevant subject. OR Master's degree in Engineering (any branch) with 8 years experience in research/ teaching/ extension education as a Scientist (Rs. 2200-4000) (pre-revised) or in an equivalent position in the relevant engineering subject. ii) As in Item No. 275(iii) above. iii) Experience in Application Software and Computer Networking.

**CENTRAL INSTITUTE FOR FRESHWATER AQUACULTURE, BHUBANESWAR**

351. Senior Scientist (Fish & Fishery Science) (Four Posts)

**Qualifications Essential:** i) Doctoral degree in Fishery Science/ Mariculture/ Aquaculture/ Zoology of Life Science in specialisation in Fish and Fishery Science. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in freshwater fin fish/shell fish breeding and/or culture.

352. Senior Scientist (Microbiology (Animal Science)) (One Post)

**Qualifications Essential:** i) Doctoral degree in Veterinary Microbiology/ Fisheries Science or Aquaculture with Microbiology specialisation. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in aquatic Microbiology/Fisheries Microbiology/ Veterinary Microbiology

**CENTRAL TUBER CROPS RESEARCH INSTITUTE, THIRUVANANTHAPURAM**

353. Senior Scientist (Horticulture) (One Post)

**Qualifications Essential:** i) Doctoral degree in Horticulture. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation on research on horticultural crops as evidenced by research publications in reputed scientific journals.

**CENTRAL AGRICULTURAL RESEARCH INSTITUTE, PORTBLAIR**

354. Senior Scientist (Horticulture) (One Post)

**Qualifications Essential:** i) Doctoral degree in Horticulture. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation, 1. Development of Agro-techniques for production of tropical fruits. 2. Collection, evaluation and conservation of tropical fruit crops.

**NATIONAL DAIRY RESEARCH INSTITUTE, KARNAL**

355. Senior Scientist (Dairy Microbiology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Dairy Microbiology or equivalent qualification. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation: Starter Culture and Fermented Dairy Products.

356. Senior Scientist (Animal Biotechnology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Biotechnology/ Molecular Biology/ Animal Genetics & Breeding/ Animal Biochemistry/ Microbiology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in evaluation of genetically modified bacterial cultures

357. Senior Scientist (Dairy Microbiology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Dairy Microbiology or equivalent qualification. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation: Experience in ultrastructure of fermented dairy products.

358. Senior Scientist (Animal Biotechnology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Biotechnology/ Molecular Biology/ Animal Genetics/ Animal Biochemistry/ Animal Physiology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in molecular and genetic engineering in livestock species.

359. Senior Scientist (Computer Application in Agriculture) (One Post)

**Qualifications Essential:** i) Doctoral degree in Computer Application/ Computer Science/ Engineering (any branch)/ Mathematics/ Statistics/ Agricultural Statistics with 5 years experience (excluding the period spent in obtaining the Ph.D. degree during service subject to a maximum of 3 years) in research/ teaching/ extension education as Scientist (Rs. 2200-4000) (pre-revised) or in an equivalent position in the relevant subject. OR Master's degree in Engineering (any branch) with 8 years experience in research/ teaching/ extension education as a Scientist (Rs. 2200-4000) (pre-revised) or in an equivalent position in the relevant engineering subject. ii) As in Item No. 275(iii) above. iii) Experience in Application Software and Computer Networking.

360. Senior Scientist (Animal Physiology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Animal Physiology/ Veterinary Physiology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in Environmental Physiology.

361. Senior Scientist (Agricultural Statistics) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agricultural Statistics. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation: Sample surveys/Design of Experiments.

362. Senior Scientist (Dairy Microbiology) at Southern Regional Station of NDRI, Bangalore under NDRI, Karnal (One Post)

**Qualifications Essential:** i) Doctoral degree in the relevant subject i.e. Dairy Bacteriology/ Dairy Microbiology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in Yoghurt-Ultrastructure/ Dried Yoghurt.

**NATIONAL RESEARCH CENTRE FOR ORCHIDS, SHIKHIM**

363. Senior Scientist (Horticulture) (One Post)

**Qualifications Essential:** i) Doctoral degree in Horticulture/ Floriculture. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in teaching/ research on ornamental horticulture.

**DIRECTORATE OF WHEAT RESEARCH, KARNAL**

364. Senior Scientist (Agricultural Extension) (One Post)

**Qualifications Essential:** i) Doctoral degree in Agricultural Extension. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in on-farm research on technology assessment, refinement and popularisation in crop plants.

365. Senior Scientist (Biotechnology (Plant Science)) (One Post)

**Qualifications Essential:** i) Doctoral degree in Plant Biotechnology (Plant Science) or Genetics/ Plant Breeding with specialisation in Plant Biotechnology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in molecular biology of crop plants preferably wheat.

**DIRECTORATE OF OILSEED RESEARCH, HYDERABAD**

366. Senior Scientist (Biotechnology) (One Post)

**Qualifications Essential:** i) Doctoral degree in Biotechnology/ Genetics/ Molecular Biology. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Specialisation in crop improvement related to latest biotechnological tools.

**NATIONAL RESEARCH CENTRE FOR ONION & GARLIC, PUNE**

367. Senior Scientist (Horticulture) (Two Posts)

**Qualifications Essential:** i) Doctoral degree in Horticulture/ Vegetable Crops. ii) & iii) As in Item No. 338(ii) & 275(iii) above. iv) Working experience in allium crops base/Vegetable agronomy.

**INDIAN AGRICULTURAL STATISTICS RESEARCH INSTITUTE, NEW DELHI**

368. Senior Scientist (Computer Application in Agriculture-Hardware) (One Post)

**Qualifications Essential:** i) Doctoral degree in Computer Application/ Agricultural Statistics/ Statistics/ Mathematics with 5 years experience (excluding the period spent in obtaining the Ph.D. degree during service subject to a maximum of 3 years) in research/ teaching/ extension education as Scientist (Rs. 2200-4000) (pre-revised) or in

an equivalent position in the relevant subject. OR Master's degree in Computer Science/ Engineering (any branch) with 8 years experience in research/ teaching/ extension education as a Scientist (Rs. 2200-4000) (pre-revised) or in an equivalent position in the relevant engineering subject. II) As in Item No. 273(iii) above. III) Experience in Software and RDBMS programming.

#### CENTRAL POTATO RESEARCH INSTITUTE, SHIMLA

369. Senior Scientist (Agricultural Entomology) (Two Posts)

**Qualifications Essential:** i) Doctoral degree in Agricultural Entomology. ii) & iii) As in Item No. 338(ii) & 273(iii) above. iv) Specialisation and experience of research on Insect Pests of Potato/ Tuber Crops/ Vegetables.

370. Senior Scientist (Agricultural Economics) (One Post)

**Qualifications Essential:** i) Doctoral degree in Economics/ Agricultural Economics. ii) & iii) As in Item No. 338(ii) & 273(iii) above. iv) Specialisation: Experience of research on Economics of Potato/Tuber Crops/ Vegetables.

371. Senior Scientist (Agronomy) at Central Potato Research Station, Modipuram under C.P.R.I., Shimla (One Post)

**Qualifications Essential:** i) Doctoral degree in Agronomy. ii) & iii) As in Item No. 338(ii) & 273(iii) above. iv) Specialisation and experience of research on Agronomy of Potato/Tuber Crops/Vegetables.

#### NATIONAL BUREAU OF FISH GENETIC RESOURCES, LUCKNOW

372. Senior Scientist (Animal/Fish Genetics & Breeding) (One Post)

**Qualifications Essential:** i) Doctoral degree in Genetics/Fishery Science/Marine Science/ Zoology/ Aquaculture/ Mariculture. ii) & iii) As in Item No. 338(ii) & 273(iii) above. iv) Specialisation in Fish population Genetics using genetic markers.

373. Senior Scientist (Animal/Fish Genetics & Breeding) (One Post)

**Qualifications Essential:** i) Doctoral degree in Genetics/Fishery Science/Marine Science/ Zoology/ Aquaculture/ Mariculture. ii) & iii) As in Item No. 338(ii) & 273(iii) above. iv) Specialisation in Fish production and Cryopreservation of Gametes.

#### TECHNICAL

#### INDIAN COUNCIL OF AGRICULTURAL RESEARCH HEADQUARTERS, NEW DELHI

Pay Scale: Rs. 8000-275-13500. Age: Below 35 years (There will be no maximum age limit for the ICAR employees. Relaxation to SC/ST candidates may be given in accordance with the orders issued by Govt. of India from time to time).

374. Assistant Editor (English) T-6 (Reserved for S.C.) (One Post)

**Qualifications Essential:** Master's degree of a recognised University in Science preferably in Agriculture or Animal Sciences or Fisheries, with 3 years' experience in Science writing and Science Journalism. This is relaxable to Bachelor's degree of the recognised university in Science preferably in Agriculture or Animal Science or Fisheries provided that the candidate has at least 7 years experience in Science writing and Science Journalism in the concerned language as evident from his publications. **Desirable:** Bachelor's degree in Journalism or Diploma in Journalism.

**IMPORTANT NOTE:** 1) The candidates selected for appointment to the posts in Animal Science disciplines and possessing degree in Veterinary Science/ Veterinary Science and Animal Husbandry followed by Masters and Doctoral degree in the relevant discipline will also be entitled to non-practising allowance as admissible under the rules from time to time subject to fulfilment of conditions of entitlement for the same as prescribed by the Council. 2) The posts appearing at Sl. No. 274 to 310 will be filled up on tenurial basis for a period of five years. However, retirement age for all Scientific and Technical posts is 60 years. 3) Candidate who have already applied for the post appearing at Sl. No. 372 & 373 in response to previous advertisement of ASRB, must also send fresh application. The fee already paid by the candidate alongwith the earlier application will be adjusted. To facilitate this they are advised to indicate the particulars of the fee already paid in the relevant column of the application form.

**CLOSING DATE FOR RECEIPT OF APPLICATIONS IN AGRICULTURAL SCIENTISTS RECRUITMENT BOARD IS 18.01.2000**

(For candidates from abroad and in the Andaman and Nicobar Islands, Lakshadweep, Minicoy and Amindivi Islands, States/ Union Territories in the North-Eastern Region, Ladakh division of J&K State, Sikkim, Pangl, Sub-division of Chamba, Lahul and Spiti, districts of Himachal Pradesh, last date will be 02.02.2000)

**GENERAL INSTRUCTIONS:** 1. For application form, please write to the Secretary, Agricultural Scientists Recruitment Board, Krishna Anusandhan Bhawan, Pusa, New Delhi-110 012. Request for form must specify Advertisement No. and name of the post and Item No. and should be accompanied by self addressed unstamped envelop (23x10 cms size). 2. Separate application with separate fee, separate No Objection Certificate, separate Vigilance Clearance Certificate is required for each post. 3. Application form complete in all respects, should reach the Office of the ASRB together with the application fee of Rs. 50/- (No fee for SC/ ST candidates) in the form of crossed Demand Draft Only drawn in favour of the Secretary, Agricultural Scientists Recruitment Board payable at New Delhi (with the name and address of the candidate written on its back) by the closing date. Applications received after the closing date will not be entertained. In case a candidate anticipates delay in forwarding of his application through proper channel, he must send an advance copy of the application alongwith the fee which must reach this office on or before the closing date. The date of the Bank Draft should not be prior to the date of issue of the advertisement in the Newspapers and the same should be valid for a period of six months. Bank Drafts valid for three months will not be accepted. 4. The candidates should fill each and every column of Application Form at the appropriate place. Wherever the space is not sufficient they could add extra sheet but it should be strictly in the prescribed format. 5. Candidates abroad may apply on plain paper and send their applications together with an International Postal Order/ Bank draft covering the application fee drawn in favour of the Secretary, Agricultural Scientists Recruitment Board so as to reach this office of ASRB by the closing date. In countries where regular commercial channels are not available, the candidates can deposit the application fee in local currency with the Indian Mission/ Posts abroad, who in turn will issue an R.B.I. draft in favour of the Secretary, Agricultural Scientists Recruitment Board, New Delhi. 6. The prescribed Essential Qualifications are minimum and possessing of same does not entitle candidates to be called for interview. Where the number of applicants is large, the Board may restrict the number of candidates for interview to a reasonable limit on the basis of qualifications and experience higher than the minimum prescribed in the advertisement. 7. If required, candidates must appear for personal interview. 8. Higher initial pay may be recommended by the ASRB for specially qualified and experienced candidates for all the posts. 9. For all technical posts and other non-scientific positions a screening test may be conducted by the Board to be followed by an interview. 10. T.A.

contribution will be admissible to those called for interview as per ICAR Rules. 11. Crucial date for determining the age limit for candidates will be the closing date for receipt of applications from candidates in India. 12. The option of use of Hindi in interviews exists in the Board. 13. Convincing in any form will disqualify a candidate.

#### CORRIGENDUM

1. Reference ASRB Advertisement No. 4/99 which appeared in the Employment News/Rozgar Samachar and other Newspapers dated 3-10/7/1999. The post of Head, Division of Transfer of Technology, CIRCOT, Mumbai (Item No. 112) stands withdrawn. The candidates who have already applied for the post must apply fresh. The fee already paid by the candidates alongwith their earlier applications will be adjusted against their applications for the post appearing at Sl. No. 305. To facilitate this they are advised to indicate the particulars of the fee already paid in the relevant column of the application form.

2. Reference ASRB Advertisement No. 5/99 which appeared in the Employment News/Rozgar Samachar and other Newspapers dated 31/7/1999 to 06/08/1999. The Essential Qualification No. (i) for the post of Senior Scientist (Biotechnology) at NRCMT, Solan (Item No. 182) may be read as: Doctoral degree in Biotechnology or Botany or Microbiology or Genetics.

Accordingly the last date for filling up of applications for the post of Senior Scientist (Biotechnology), NRCMT, Solan, has been extended to (31.12.1999).

3. Reference ASRB Advertisement No. 5/99 which appeared in the Employment News/Rozgar Samachar and other Newspapers dated 31/7/1999 to 06/08/1999, the post of Senior Scientist (Animal/Fish Genetics & Breeding) at NBFCR, Lucknow (Item No. 233) stands withdrawn. The candidates who have already applied for the post must apply fresh. The fee already paid by the candidates alongwith their earlier applications will be adjusted against their applications for the post appearing at Sl. No. 372 & 373. To facilitate this they are advised to indicate the particulars of the fee already paid in the relevant column of the application form.

4. Reference ASRB Advertisement No. 5/99 which appeared in the Employment News/Rozgar Samachar and other Newspapers dated 31/7/1999 to 06/08/1999. The Essential Qualification No. (i) for the post of Head, Division of Crop Protection, IIPR, Kanpur (Item No. 153) may be read as: Doctoral degree in Zoology (specialisation in Entomology)/ Entomology/ Plant Pathology/ Nematology.

Accordingly the last date for filling up of applications for the post of Head, Division of Crop Protection, IIPR, Kanpur has been extended to (31.12.1999).

5. Reference ASRB Advertisement No. 6/99 which appeared in the Employment News/Rozgar Samachar and other Newspapers dated 18-25/9/99. The post of posting in respect of the following posts may be read as:

Item No. 251 Senior Scientist (Soil & Water Conservation Engineering) at CS&WC&TI, Dehradun may be read as 'at CS&WC&TI, Dehradun's Regional Station, Koraput'. Item No. 258 Senior Scientist (Agronomy) at CPCRI, Kasaragod may be read as 'at CPCRI's Regional Station, Kanyakulam.

Other contents remain unchanged.

Notice: The post of T-7 (Public Relation Officer), ICAR Hqrs., New Delhi was published vide Item No. 273 in Adv. No. 6/99, which appeared in Employment News/Rozgar Samachar and other Newspapers on 18-25/9/1999, in which the upper age limit was indicated as 45 Years. However, in the 'Information for Candidates' supplied to candidates who had called for application forms the upper age limit was indicated as 35 years due to typographical error. It is notified for information of interested candidates that upper age limit is 45 years and the last date for submission of application forms has been extended to 31.12.1999. Those already applied need not apply again.

#### APPLICATION FEE REVISED TO Rs. 50/-

davp 99/577

#### TO OUR CONTRIBUTORS

Contributors are expected to submit only original articles for publication in the *University News*. If an article is found to be plagiarised, it will be the sole responsibility of the contributor to face legal action, if any.





**Centre for Distance Education**  
**UNIVERSITY OF HYDERABAD**  
**ADMISSION NOTIFICATION 2000**

The University invites applications from eligible candidates for admission to the following Postgraduate Diploma Programmes of one year duration to be offered through distance education mode from January 2000.

1. Computer Science (PGDCS)
2. Planning and Project Management (PGDPM)
3. Environmental Education & Management (PGDEM)
4. Translation Studies in English (PGDTSE)
5. Translation Studies in Hindi (PGDTSH)
6. Human Rights (PGDHR)
7. Television Production (PGDTVP)
8. Library Automation and Networking (PGDLAN)
9. Telecommunication (PGDTC)
10. Energy Management (PGDEGM)
11. Chemical Analysis and Quality Management (PGDCAQM)
12. Professional and Organizational Ethics and Values (PGDPOE)

Graduates from any recognized Indian University are eligible for the above Programmes except for PGDLAN for which Bachelor's degree in Library Science is required. While for PGDTC Programme, study of subjects related to Mathematics, Statistics or Physics at graduation level is necessary, for PGDCAQM programme, Chemistry as one of the subjects is required. Admission will be based on merit and there will be no entrance test. Reservation exists in respect of candidates belonging to SC/ST/PH categories. Other details like programme fee, study schedule, contact classes, course delivery schedule etc, can be found in the Prospectus.

**Sale of application forms to begin from : 06.12.1999 (Monday)**  
**Last date for submission of filled-in applications : 20.01.2000 (Thursday)**

**Prospectus-cum-Application Form at a cost of Rs. 125/-** can be had from the office of the Asst. Registrar (Distance Education) in the University Campus, Gachibowli OR from the 'Golden Threshold' premises of the University located on Nampally Station Road. Requests for supply of applications by post should be addressed to the Asst. Registrar (DE), University of Hyderabad, Central University P.O., Hyderabad-500 046 accompanied by a crossed demand draft for Rs. 150/- drawn in favour of the Finance Officer the University of Hyderabad, on any national bank payable at Hyderabad.

**Hyderabad**  
**Dt. 29.11.1999**

**P. Murali Krishna**  
**OFFICER ON SPECIAL DUTY**

# CLASSIFIED ADVERTISEMENTS

## UNION CHRISTIAN COLLEGE

ALWAYE

(Affiliated to Mahatma Gandhi University, Kottayam)

Accredited with Five Stars By NAAC

(The National Assessment and Accreditation Council)

### WANTED

**Lecturer in Psychology :** Open/Community (Jacobite/Orthodox/Marthoma/CSI) Quota.

**Qualification and age :** As per UGC norms.

Prescribed application form can be had from the College Management Office on payment of Rs. 100/- (in person)/Rs. 120/- by money order. Apply within 30 days of this advertisement. Appointment is subject to approval by University/Government.

Post Box 5

Alwaye-2

2/12/99

MANAGER

## HIMACHAL PRADESH

### UNIVERSITY

RECRUITMENT BRANCH

SHIMLA-171 005

### ADVERTISEMENT NO. 4/99

Applications are invited (on prescribed form) for the following teaching/non-teaching posts so as to reach the Deputy Registrar, Recruitment Branch, alongwith a Crossed Indian Postal Order of Rs. 200/- (Rs. 50/- for SC/ST) payable to the Finance Officer, HPU, Shimla-5 by January 7, 2000 :

**I. Professor :** (Pay Scale : Rs. 16400-22400) in the following subjects of Teaching Deptts :

English-1, Public Administration-1, Law-1, Music-1 (Leave vacancy for about one year), Hindi-1 (Leave vacancy for about one year), Education-1, Political Science-1, Psychology-1 (Spl. Environmental Psy./Organizational Psy./Stress and Anxiety/Comparative Psy.), Physical Chemistry-1, History-1 (Spl. in Medieval Indian History), Geography-1, Computer Science-1, Management Studies-1 (Spl. in Per. Mgt.).

**II. Reader.** (Pay Scale : Rs. 12000-18300) in the following subjects of :

(i) Teaching Deptts :

Chemistry-3 (Spl. one in Inorganic Chem./Analytical Chemistry & others two in Organic Chem.), Sociology-1, Electronics-1, Zoology-1, Education-1 (Spl. in Edu. of disadvantaged

groups/Educational Philosophy/Teacher Education), Psychology-1 (Spl. in Clinical Psychology/Psychometrics/Stress & Anxiety/Experimental Psy.), Buddhist Studies-1, Bio-Chemical Engineering-1, Yoga-1, Computer Science-2.

(ii) For International Centre for Distance Education & Open Learning :

Hindi-1, History-1, Commerce-1, Education-3, English-1.

(iii) For HPU Regional Centre, Dharamsala .  
Law-1.

**III. Lecturer :** (Pay Scale : Rs. 8000-13500) in the following subjects of :

a) (i) Teaching Deptts . (Open/General Category) : Music-3 (Spl. — One each in Instrumental Sitar, Instrumental Tabla and one in Vocal Music), Political Science-2, German-1, French-1, Botany-1, Environmental Science/Ecology-1, Commerce-2, Painting-1, English-1, Physical Education-2.

(ii) For International Centre for Distance Education & Open Learning : (Open/General Category)

History-1, English-1.

(iii) For HPU Regional Centre, Dharamsala . (Open/Genl.) Law-1, Public Administration-1, Mathematics-1.

(iv) For HPU Evening College, Shimla : (Open/Genl.) Hindi-1, Commerce-1, Political Science-1.

b) Reserved for Scheduled Castes Category .

Economics-1, Physics-1.

c) Reserved for O.B.C. Category .

Pharmaceutical Chemistry-1, Management Studies-1.

**IV. Deputy Director/Officer-in-Charge (AERC)-1**

(Pay Scale : Rs. 12000-18300)

**V. System Analyst-1** (For HPU Computer Centre)

(Pay Scale : Rs. 3700-5700, un-revised).

**VI. Programmer-1** (For HPU Computer Centre)

(Pay Scale : Rs. 2200-4000, un-revised).

**VII. Information Officer-1**

(Pay Scale : Rs. 2200-4000, un-revised

on contract basis under sub-DIC Programme in Bio-Tech. Deptt.)

**VIII. Information Scientist-1**

(Pay Scale : Rs. 2200-4000, un-revised — For HPU Library under Inlilbnet Programmes being financed by UGC upto 1999-2000).

**IX. Medical Officer-2 (Male) :**

(Pay Scale : Rs. 7880-13500 with a start of Rs. 8000/- p.m.)

The eligibility of every candidate will be determined on the basis of qualifications acquired by him upto the last date fixed for the receipt of application.

Candidates called for interview will have to come to the place of the interview at their own expenses and bring with them their original research papers, degrees and certificates etc for verification.

The university reserves the right to fill up or not to fill up the posts or to call only suitable candidates for interview. The number of posts likely to be filled may vary.

Application form alongwith detailed qualifications and other conditions can be obtained from the Deputy Registrar, Recruitment Branch, on payment of Rs. 25/- in cash or by making a written request to him accompanied by self-addressed envelope of 23x10 cms. with postage stamps affixed worth Rs. 3/- and a postal order of Rs. 25/- drawn in favour of Finance Officer, H.P. University, Shimla-5.

**Note :** i) Applications received on plain paper, without fee/required documents and received after the last date, shall not be entertained.

ii) A person applying for more than one post should send a separate application form for each post.

iii) Persons who have applied earlier for the above mentioned posts of Professor/Reader/Lecturer (Open/reserved categories)/Dy. Director/Officer Incharge (AERC)/System Analyst/Programmer/Medical Officer advertised vide Advt. No. 1/98 dated 15.6.98, Advt. No. 2/98 dated 28.10.98 and Advt. No. 1/99 dated 24.4.99 need not to apply again. However, they may send additional informations, if any.

iv) Paste passport size photograph, duly attested by the competent authority on the front page of the application form.

Advt. No. 49/HPU/PR **Dhruv Vashist**  
**REGISTRAR**

*Introducing*

# LibSys 4

**Web enabled**

**Ideal for  
Networking**

**most advanced  
Integrated Library System  
now includes  
all these features**

- Client-server implementation
- Windows GUI
- ANSI Z39.50 compliant Search Engine
- Web Browser-based LIBSYS Client (Java/HTML/PERL)
- Option for MARC implementation
- Images and multi-media integrated with LIBSYS Search Engine
- Y2K compliant
- Option to have backend RDBMS-ORACLE or MS SQL Server

LIBSYS has been in operation since 1988 and is now well field proven. Its installation base includes universities, IITs, IIMs, Research Laboratories, academic, corporate and government institutions. All the British council libraries in India and other South Asian countries have automated their operations with LIBSYS. A Spanish version of LIBSYS has also been installed in a university in Central America.

Being comprehensive, LIBSYS covers all the operations of a large library in the area of Acquisition, Cataloguing, Circulation, Serials control and Online searching. It is also suitable for small and medium size libraries. The depth in functionality and user-friendliness make LIBSYS a worldwide favourite.

LIBSYS provides ample flexibility in choosing operating platforms. The Server may be UNIX (SCO, Unixware, Sun Solaris, Alpha OSF/1, AIX, HP-UX, IRIX, etc.) or WINDOWS NT or NOVELL Netware. The Client/Node might be any of Windows 3.x/95/NT, X Window workstations, VT100 / Windows terminals or Network computer (Java Stations).

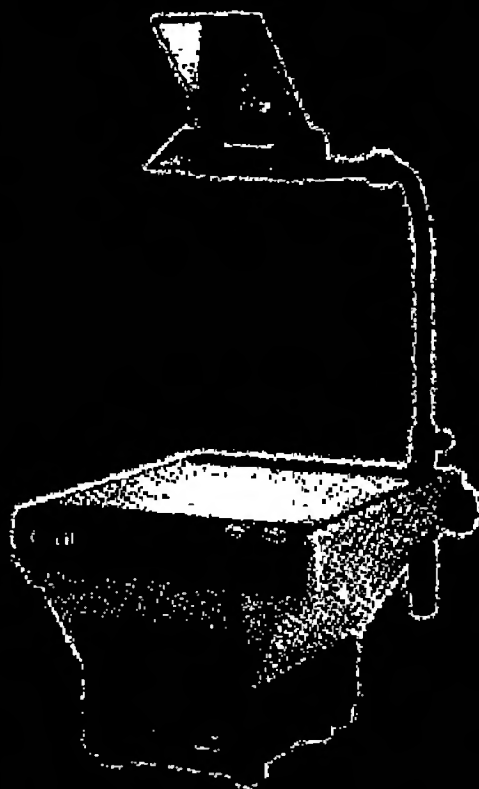
So, whenever you are ready for library automation, go for the one and only solution- LIBSYS 4.

**LibSys**  
CORPORATION

D-7/A Rockview Flats, Munirka, New Delhi-110 067  
Tel.: +91 11 617 1161/2/3 Fax : +91 11 610 3661  
e-mail : libsys@del2.vsnl.net.in Website : <http://libsys.net>



# THE SHAPE OF PRESENTATIONS TO COME



## INTRODUCING PHIL METEOR OHP

- Unique Design
- High Lumen Output
- Dual Lamps
- Occupies Less Table Space
- Light Weight and Compact
- Improved Heat Dissipation
- Very Affordable Price

**FREE**

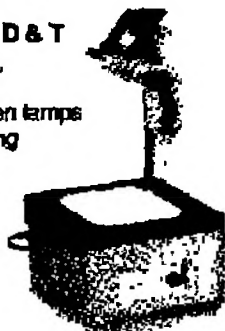
THE ART OF MAKING A  
GREAT PRESENTATION  
Write / fax with name  
& address  
for a FREE booklet  
today!

## PHIL's Complete Range of Presentation Solutions

### OHPs

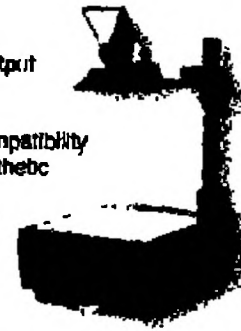
#### PHOTOPHONE D & T

- D - single lamp,  
T - double lamp
- Daylight halogen lamps
- Improved cooling
- Voltage surge  
protection
- Sturdy build



#### GALAXY 2000

- High lumen output
- Edge to edge  
sharp image
- LCD panel compatibility
- Sleek and aesthetic
- Light weight,  
easily portable



### 35mm Slide & LCD Projectors

#### 35AF

- Bright, clear images
- Auto focus
- Rugged and sturdy
- Adaptable to linear and circular trays



#### PHIL MULTIMEDIA LCD PROJECTOR

- Brightest portable multimedia  
LCD Projector
- 600 ANSI lumens
- 16.7 million colours for  
photorealistic images
- Zoom and focus control
- Connects two computers and  
two video sources simultaneously



### Digital Printers, Scanners & Copiers



#### POLAROID SPRINTSCAN 35 FILM SCANNER

- Scans 35mm slides and negatives
- High resolution of 2700 dpi
- Real time colour processing and sharpening
- Compact, light weight and portable



#### POLAROID HR 6000 SLIDE PRINTER

- Prints high resolution 35mm slides
- Edge to edge sharpness
- Compatible to PC and Mac



#### MINOLTA CS PRO SERIES COPIERS

- High copy quality
- High productivity
- Easy operation
- High reliability
- Simple Maintenance
- Environment friendly



#### POLAROID PROPAPLETTE 8000 FILM PRINTER

- Highest quality 35mm  
slides and negatives
- Auto brightness and colour  
balance control
- Compatibility for PC,  
Mac and UNIX
- Ideal for photo restoration

## PHIL SYSTEMS LIMITED

**HEAD OFFICE:** Phil Systems Ltd., Phil Centre, Tivim Industrial Estate, Karaswada, Mapusa, Goa - 403 526.

Tel: (0832) 255345, 255261, 255617, 255208 Fax: (0832) 255125, 255545 E-mail: [psl.sales@phil.com.sg](mailto:psl.sales@phil.com.sg)

**AREA OFFICES:** Ahmedabad Tel/Fax: (079) 7470637 Bangalore Tel: (080) 2255226 Fax: (080) 2283947 Calcutta Tel: (033) 4633154 Fax: (033) 4646583 Chennai Tel: (044) 8555742 Tel/Fax: (044) 8512013 Cochin Tel/Fax: (0484) 383495, 364741 Delhi Tel: (011) 6440093 Fax: (011) 6464436 Goa Tel: (0832) 225268, 228605, 230936 Fax: (0832) 422521 Indore Tel: (0731) 542166 Fax: (0731) 535885 Jaipur Tel: (0141) 377881 Fax: (0141) 360690 Lucknow Tel: (0522) 384028 Fax: (0522) 386646 Ludhiana Tel/Fax: (0161) 429688 Mumbai Tel: (022) 8590118-21, 8590125-27, 8520257 Fax: (022) 8523260, 8526362 Pondicherry Tel/Fax: (0413) 224983 Secunderabad Tel/Fax: (040) 7841946, 7897852

AXIS / P8 / 301 / 98

Published by SUTINDER SINGH, on behalf of the Association of Indian Universities, AIU House, 16 Kotla Marg, New Delhi-2.  
Grams: ASINDU. Phones: 3230059, 3232429. Fax: 011-3232131 E-Mail: [aiu@del2.vsnl.net.in](mailto:aiu@del2.vsnl.net.in) Website: <http://www.aiuweb.org>

Printed by Tara Art Press, B-4, Hans Bhawan, B.S. Zafar Marg, New Delhi-110002. Tel. 3318626, 3319686